the American Perfumer and ESSENTIAL OIL REVIEW

COSMETICS - SOAPS - FLAVORS

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Editorial Comment

So you have trouble getting help!

Right now the manpower situation is acute. Our radio appeals to able-bodied listeners to volunteer in certain critically short industries. The Government appeals to workmen not to be swayed by the optimistic war news to leave their jobs.

Present indications are that with the cessation of war in Europe some of our servicemen will be mustered out to return to peacetime activities, but even so a lag period will occur. The records show that in plants where conversion has taken place to civilian goods, women employees who were temporarily laid off for the changeover, are to a large extent, absorbed back into their previous life of non-labor.

Thus the labor market is fluid, but it has at the same time reached the saturation point. Those who are not extremely lucky will probably have to see to it that their present quota of workers will have to suffice for quite some time. But they can get more use of the help they have. The solution is simply, *safety*.

Don't be misled at infrequent accidents. In some small plants the accident rate appears to be low because there are few employees, whereas in reality the plant is a bad risk. The only way to arrive at a proper evaluation is to project accidents against the number of employees.

It hurts the small plant to lose productive work just as much as the big one, perhaps more as it may not be as flexible. Minor accidents may not result in loss of time until some later date, or accidents that appear trivial may not have been so under slightly different circumstances. The point is that all accidents are serious.

The installation of a sound safety program calls for careful analysis.

Maintaining a safety program calls for effectively organizing everyone in the plant. A safety committee should be appointed to prevent back-sliding.

It's all a little trouble, but it pays dividends. Make the most of a limited labor supply by seeing that work days are not lost through carelessness. Safety is horsesense.

Specify

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Pharmaceutical and cosmetic manufacturers everywhere, specify Penn-Drake Petrolatum, to safeguard the cherished high standards of quality and reputation of their products.

Refined from the world's finest crude oils, fortified by seventy years refining experience Penn-Drake's constant scientific research and rigid laboratory control combine to produce the superior smoothness and blending quality of Penn-Drake Petrolatum.

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desiderata

Comment on interesting new chemical developments and their application to cosmetics and toiletries

by MAISON G. DENAVARRE

M. G. DeNavarre at work in his laboratory

COMMENDING COUTINHO

Many were the comments made of Dr. Henri Coutinho's reading of his scientific paper entitled "Molecular Constitution and Bromo-Acid Solubility" before the Toilet Goods Association Scientific Meeting recently. Rather than refer to ketones or glyceryl hydroxystearates, some people would have preferred to have heard him say "acetone" or "castor oil" or some common thing that they understood better.

But the technically-trained people took many notes. For Dr. Coutinho had attacked the problem at the root, making a methodical study of exactly what is necessary to make a product a good bromo acid solvent. For his gift to lipstick manufacturers, Dr. Coutinho has a large bouquet of flowers coming to him. But for his publication and gratis distribution of this scientific study, he should get a medal of some kind. More of this kind of unselfishness is needed in the industry. Congratulations to you Dr. Coutinho. You are a gentleman and a scientist. More of this good work from you. It will always be welcome by real technicians of the industry.

CORRECTIONS

The more one writes, the greater the opportunity to make an error. Recently, I made two errors, one almost on top of the other.

The first error was the use of the word "Official" on the antiseptic test, P-II in the serialized version of my book, "Production Control and Analysis of Cosmetics," in the May issue of THE AMERICAN PERFUMER. The methods are not official, since there are no *official* methods for testing antiseptics. The title was correct if the word "official" had not been used. Even so, the Food and Drug Administration prefers another designation of the methods described in Circular 198, especially since the FDA is now under the Federal Security Agency. After discussing it with Dr. P. B. Dunbar, the following title is found to be preferred and more accurately descriptive of the methods of testing antiseptics described in Circular 198. So, P-II is now entitled "*Methods of Testing Antiseptics & Disinfectants*," *G. L. A. Ruehle and C. M. Brewer, Circular 198, U. S. Department of Agriculture, December, 1931.*

Prior to the publication of the first chapter, I solicited criticism. Dr. Dunbar is one of several who have been kind enough to give it. I hope that others will let me hear from them from time to time as further chapters of this book are published. There are bound to be errors but I hope that readers will be good enough to point them out, and that errors will be few.

In the July *Desiderata*, I inadvertantly used the word *pancake* to describe a cake make-up compressing machine. My sincere apology to the Max Factor Company who own the trade mark "Pancake." They alone have the exclusive right to the word.

This company also calls my attention to the fact that on page 63 of the same issue of THE AMERICAN PERFUMER, there is a range of ingredients in a blanket formula for cake make-up that falls within the range of ingredients and formulas covered by U. S. Patents 2,034,697 and 2,101,843 which are owned by the Max Factor Company.

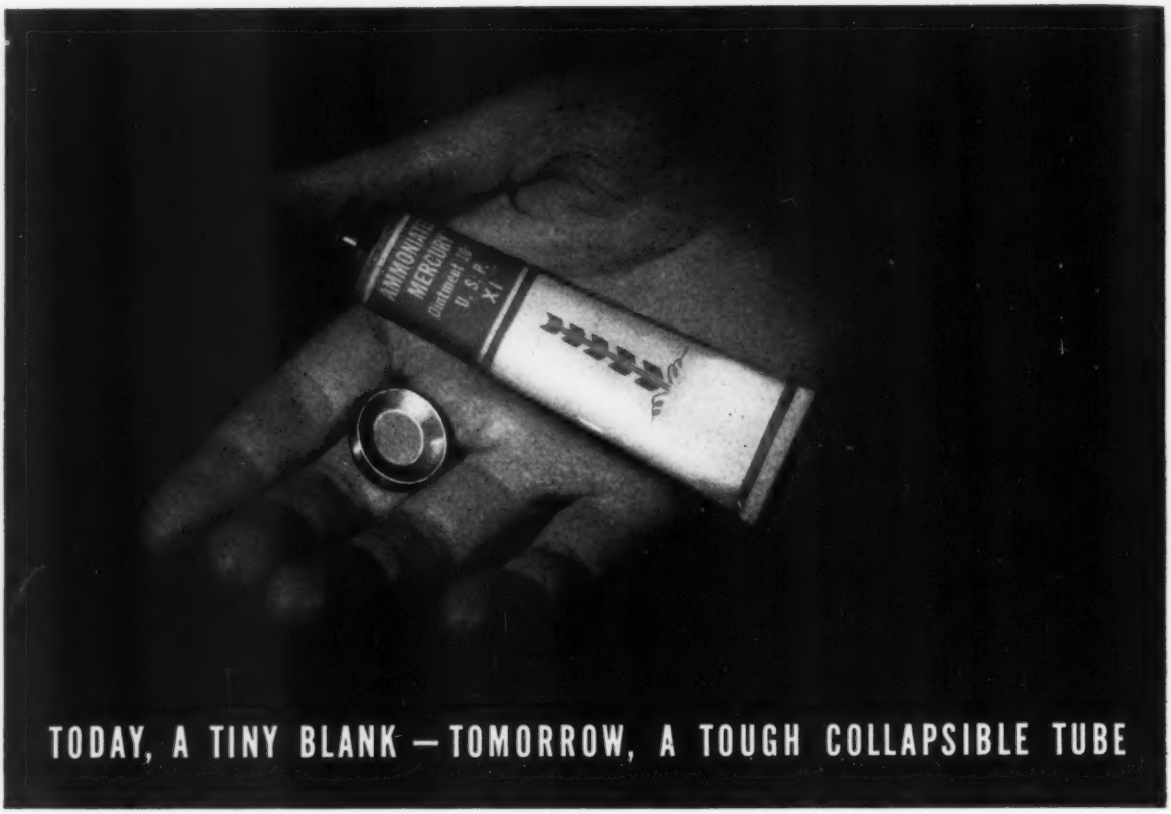
While it is true that it is possible for my formula and ingredients to fall within the patented range, it is not necessarily probable that it will. In fact, cake make-up is being made every day that does not infringe on the patents mentioned, but whose ingredients are known by the generic names ascribed in my article. It is true, however, that compounders of cake make-up must be aware of the existence of the aforementioned patents to be certain of no infringement. I should have mentioned this in my article even though I assumed that everyone working or intending to work with cake make-up was doing so in the light of existing patents.

F.D.A. AND HORMONE CREAMS

I have had a number of people ask me about the safety of making and selling hormone creams. Some have written directly to the FDA and have received the usual answer, namely, that the safety of these products has not been established and that the burden of proof of safety is on the manufacturer. What else could the FDA tell anyone? If in their position and you and I had their background, that is all we could tell anyone, *for sure*.

No one knows how safe a hormone cream really is, under all conditions of use by all kinds of people. A pint of water on a hot day makes a nice drink. Yet a pint of water on a hot day improperly used can drown you or close to it.

Skin applications of hormone creams have been made for almost as long as such pure hormones have been available, which is within the last ten years or so. They have been found to be absorbed in substantial amounts especially if applied to areas



TODAY, A TINY BLANK — TOMORROW, A TOUGH COLLAPSIBLE TUBE

THEY'RE *tough*, these New England Tubes . . . that's why so many medical ointments are packed in them for General Issue to our troops in the field, for the nurses and the doctors that serve our men. There's no time to take chances on weak, broken tubes. Strong, flexible Sheffalloy Tubes are being shipped in convoys to all parts of the world to function in climates from the below-zero temperature of the arctic, to the merciless humid heat of the tropics.

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where the skin can be properly massaged with the cream or ointment. Therapeutic results are being obtained by some doctors who prefer this method of dosing with the estrogen to hypodermic injection. At least one ethical ointment is made for doctors who want this kind of application.

But a therapeutic dose of estrogen is at least 10,000 International Units, given at one time; often 20,000 units are injected in a single dose. The injections are given once a week and oftener as needed.

The average hormone cream contains 7,500 International Units (I.U.) of estrogen per ounce. An ounce lasts at least two weeks. So it is plain that there is no danger of overdosing even if the whole jar is used at one time, and if all the estrogen is absorbed.

Whether or not the hormone creams do manifest a local effect is another thing. I have always claimed, and still do, that any therapeutic agent applied to the skin, first manifests its action at the site of application. A general body effect is next manifest *after* the blood stream picks up the therapeutic substance. Since the estrogens and other hormones possess certain normalizing properties for the human animal when the animal no longer gets enough of the hormones in question, and since the average adult skin loses the bloom at youth at about the same rate as the hormones are depleted, due to aging, it is only logical to assume some connection between the two. In practice, I have found that women past forty, who have used an ordinary cream for some time and who were given the same cream but fortified with estrogens, noticed an easily felt difference from only one application of the hormone cream. Women of this age who continue to use such a cream regularly, do have a nicer looking skin. Some make other beneficial claims. But there is scientific reasoning behind this all that makes it very rational for an older woman to use a hormone cream in place of an ordinary night cream.

It has been asked whether a hormone cream can produce cancer. Since no one knows all the causes of cancer and since, therefore, most anything can *conceivably* cause cancer if it irritates animal cells, it is *conceivably* possible that a hormone cream could do it too, but it is quite probable it won't. If it is safe enough to inject 10,000 International Units of estrogen at one time without fear of producing cancer, it certainly is safe enough to apply a much smaller quantity to the skin. There is no indisputable proof of cancer resulting from skin applications of hormone creams or even much stronger hormone ointments, as yet.

Your hormone cream must be labeled as a drug, giving names (and amounts of active ingredients in this case) of active ingredients, full directions for use by all kinds of people, together with the usual labeling requirements for cosmetics.

Questions and Answers

516 ALIEN PATENT

Q: *In the May issue of* THE AMERICAN PERFUMER, *we note that there is an Alien patent on a Stable Para-Phenylene Diamine Hair Dye Powder. Please give us the number of this patent and any other information regarding it.*

S. M.—OHIO

A: The patent in question is vested by the Alien Property Custodian, Washington 25, D. C. It was issued to Paul Langenkamp on December 10, 1929, and is entitled—STABLE PULVERIZED HAIR DYE—U. S. Patent No. 1,738,590. You can get a license from the Alien Property Custodian to use this patent for a fee of $15.00. Write to the Washington office for complete details.

517 HOME HAIR WAVING KIT

Q: *A customer of ours is interested in a cold process hair waving kit for use at home. We would appreciate any information regarding formulas for making such a kit.*

I. D.—MEXICO

A: The home waving kits of the most popular type contain a fixed alkali with or without sulfites in such proportion so that when the small envelope of reagent is added to a fixed amount of water, a permanent waving solution of general usefulness results. Along with this is always included a parcel of paper hair curlers, a bottle or an envelope of concentrated shampoo and occasionally an envelope of neutralizer. The neutralizer may be any of the group of ingredients that is used as a hair rinse, such as one of the phosphates, citric or tartaric acids. The hair is washed, and wound on the paper curlers, then wetted with solution (or the hair may be wetted with the waving solution before winding), the head is covered wth a wax paper or parchment cap and left in place, preferably overnight, or for at least six or eight hours.

518 SOAPLESS SHAMPOO

Q: *Your June issue had an article on soapless shampoo and certain patent numbers available through the Alien Property Custodian. We are interested in this item and will be pleased if you will give us further information.*

B. H.—PENNSYLVANIA

A: The item in question is covered by U. S. Patent No. 2,289,004, issued to Ehrhart Franz. You may write for a license to the Alien Property Custodian, Washington 25, D. C., for information regarding a license to use this patent. The usual fee is $15.00.

519 EMULSIFIED HAIR DRESSING

Q: *I would like to manufacture an emulsified hair dressing. Can you furnish me with a formula for this? Also advise me as to where I could secure the materials.*

T. T.—OHIO

A: We do not have a formula for an emulsified hair dressing, but we are sending you the name of a supplier, under separate cover, who manufactures a base supposedly useful in this type of product. Two types of such hair dressings have been found on the market, namely, water-in-oil and oil-in-water types. The water-in-oil type has been the most successful. If your product does not have sufficient oil in it, it will not act as a good hair dressing.

Survey of Brazilian Mint Oil and Menthol

Current conditions speculative and uncertain . . . Growers and middlemen largely unreliable . . . Production expanding rapidly and striving toward stabilization

by DR. ERNEST GUENTHER

Chief Research Chemist, Fritzsche Brothers, Inc., New York, N. Y.

THE production of menthol from the Japanese mint, *Mentha arvensis* var. *piperascens* Malinvaud, grown now in the Western Hemisphere, especially in Brazil, represents one of the most remarkable developments in the essential oil industry since the entry of the United States into World War II. For many years previous to that date, Japan and certain adjacent parts of China had been the main suppliers of this commodity, so important in all sorts of pharmaceuticals, oral preparations and for the flavoring of certain brands of cigarettes. In fact, Japan had held almost a monopoly in regard to natural menthol, challenged only during the last decade or two by the newly discovered synthetic product.

INTRODUCTION

In prewar years, the United States alone imported on the average about 500,000 pounds yearly of menthol from Japan and Japanese occupied China. Despite the fact that in the hands of Japanese manufacturing trusts and exporters the article often became one of speculation, the United States depended upon those exporters for the continuance of many nationally advertised specialties. Unprepared for the war as the United States was, our industries found themselves in a serious plight once the relatively small stocks of menthol were exhausted. The American or English peppermint oil, as distilled from *Mentha piperita*, does not lend itself to the isolation of menthol because it contains only 50 to 55 per cent of this terpene alcohol. The Japanese mint oil as distilled from *Mentha arvensis*, on the other hand, contains 80 to 85 and even 90 per cent menthol and, therefore, presents the most economical source of natural menthol.

It was thus a great relief to the American pharmaceutical industries when suddenly Brazil appeared on the market with offers of natural menthol as extracted from Brazilian grown *Mentha arvensis*. Starting in 1936 with a few kilos of mint oil distilled on a purely experimental basis, Brazil in 1942-43 produced about 80 tons of oil, in 1943-44, approximately 350 tons, and will produce much more during the coming harvest, December, 1944, to May, 1945, provided no disturbing factors such as drought, plant diseases or insect pests upset the expansion of the present mint acreage. Despite the heavy production of mint oil, crystallized menthol was slow in reaching the United States, prices reaching exorbitant levels and many contracts remaining unfilled. It was for the purpose of gaining first-hand knowledge of the seemingly contradictory factors and the mystery underlying Brazil's new menthol industry that the author undertook a personal survey in the mint growing regions of São Paulo, Brazil's principal mint oil and menthol producing state. The following report will attempt to clarify the picture.

Working in the Fields

GENERAL SETUP

Brazil stands today on the threshold of a new era of unprecedented progress which will be based upon exploitation of its immense, mainly untapped natural resources and development of the newly established industries of consumers goods which, until the outbreak of World War II, had been imported mainly from Europe. Space does not permit us to delve into this fascinating chapter or speculate as to its far-reaching consequences upon the postwar commercial relationship between war exhausted Europe and vigorous South America bustling with new industries of finished goods. The present war also induced, in fact, forced most Latin-American countries to develop

their natural wealth which had remained dormant while Europe and North America continued to import raw materials from the old established sources in Asia and Africa. The great variety in climate, soil and altitude of Brazil, for instance, permits the growing of almost any agricultural crop, once the necessary experience is gathered and a sufficient demand for export created. Coffee, cotton, and citrus fruits are only a few examples of Brazil's possibilities in this respect.

"The Creator must be a Brazilian because He blessed us with so much bounty" is an old Brazilian saying, to which the people of São Paulo add, with some measure of local patriotism, "Brazil is a long freight train and São Paulo is the locomotive pulling it." Blessed by a more temperate climate, in which the white man retains his energy, the State of São Paulo has indeed developed Brazil's greatest and most prosperous industries, including agriculture. Immigrants from Portugal, Italy, Germany, England, France, Switzerland, Syria and many other countries have been able to apply their Old World experience in a new land of untapped natural resources, and to lay the foundation for many a modest enterprise which their children, proud Brazilians now, are building into truly great industries. This development closely parallels that of North America about 100 years ago when the seemingly limitless expanses of the Middle West and Far West were opened to immigrants from the Eastern States and from Europe. Brazil, especially São Paulo, is booming today with beautiful suburbs, mighty office buildings, skyscrapers, modern hotels, factories springing up amidst humble small towns and villages. New industries are being created. Agriculture is expanding, cutting into vast virgin forests and creating arable land for new crops. These amazing activities could not succeed without a genuine spirit of pioneering which often must involve a certain amount of gambling, speculation and recklessness. Such indeed is the spirit of São Paulo, otherwise the surprisingly quick development of that great State could not be explained. The same driving factors, however, have often led to overproduction and to severe crisis, as, for instance, in the case of coffee, caffein, and lately with orange oil. Only too frequently all sorts of people, rushing into a new enterprise which promises quick and high returns, possess no experience whatsoever in the line and act merely as speculators.

JAPANESE GROWERS

These features apply with equal validity to the newly developed Brazilian mint oil industry, but here the situation was aggravated from the beginning by the peculiar mentality of the Japanese growers, field brokers and intermediaries in whose hands the industry was concentrated. Brazil has among its population about 200,000 Japanese, many of whom immigrated to Brazil after Tokyo's great earthquake in 1923. About 180,000 of these Japanese live in the State of São Paulo, forming there closely knitted colonies and communities. Their activities have remained mainly agricultural and while in some sections, especially around the city of São Paulo, they exercised a beneficial influence upon the agricultural development of the countryside, in many cases they have not been permanent settlers and contributed little in cultural respect. Most of these simple Japanese peasants work on a sharecrop basis, do not own land. They arrive with their families in a section to be developed, burn the jungle and raise a few quick-growing crops without fertilization; they plant no orchards, build no permanent homes, but live drearily in dingy huts. After a few years of hard toil, when the exhausted land produces no longer, they move away like locusts to start anew on virgin land. Such are the Japanese settlers and share croppers who introduced the *Mentha arvensis* plant from Japan, cultivate it today on a large scale and distill the oil in numerous field stills. Together with their field brokers, they still dominate the Japanese mint oil industry, although lately more and more Brazilian farmers and wealthy landowners are planting and expanding this now so profitable crop.

From the many field distillers the mint oil is then sold through a system of brokers and intermediaries to menthol manufacturers located mostly in the city of São Paulo. These so-called crystallizers, about twenty in all, extract the menthol from the oil by a process of freezing, the details of which will be explained in a following chapter. Not all the crystallizers are actually operating, however; some, still struggling to iron out "bugs," are not yet in a position to supply a satisfactory quality of menthol. Some plants are very small, home industries so to speak, but the larger ones surprise the visitor with their modern, efficient equipment. One or two employ Japanese laborers who had acquired the necessary experience in similar factories in Japan. At least two of the plants are managed by refugee chemists from Central Europe who are now extracting menthol from the oil, not only by mere freezing but also by chemical means. A few menthol extraction plants are owned by bankers and wealthy industrialists who went into this business because it promised high profits with a probably quick amortization of the invested capital.

OPPOSITION TO HIGH PRICES

More and more the menthol crystallizers endeavor to become independent of the unreliable Japanese growers, field distillers and middlemen by planting large acreages of *Mentha arvensis* on their own lands and distilling their own oil near the plantations. This not only offers the benefit of much lower prices but also assures a definite supply of absolutely pure oil on which to base their menthol contracts with buyers abroad. Once this transition of mint oil production from Japanese hands to the more reliable Brazilian producers is completed, the Brazilian menthol industry will become more stable. It should be pointed out in this connection that the menthol manufacturers and exporters are mostly opposed to the prevailing high menthol prices as long as they must pay to the grower-distillers correspondingly high prices for the mint oil. The more intelligent and farsighted among these menthol manufacturers would rather see their newly established industry on a sound, permanent basis, enabling them to withstand competition from Japan after the war. Besides, they fear, and rightly so, that present exaggerated prices will encourage mint oil production in other countries, especially in Central America where climatic, soil and labor conditions are also favorable.

Hauling Mint on Ox-car during gasoline shortage

A Field Still of Mentha Arvensis

As indicated, most of the larger menthol manufacturers operate through their own export organizations and are represented by agents in the United States. There are also many exporters in Rio de Janeiro, Santos and São Paulo, who purchase their requirements from the various manufacturers and ship the menthol crystals like any other export commodity.

PRESENT SITUATION

Encouraged by firm offers from Brazilian exporters and menthol manufacturers, United States importers and buyers contracted during October, 1943, for about 300 tons of menthol to be shipped after the mint harvest, December, 1943, to May, 1944. Three hundred tons require about 600 tons of complete mint oil, a very large quantity in view of the fact that during the preceding year Brazil had produced only about 80 tons of oil.

However, the large expansion of mint plantings during 1943 seemed to the menthol manufacturers and exporters sufficient to cover their requirements of complete oil from which to extract the menthol and fill their contracts. The industry was then in its infancy and on a very uncertain, rather speculative basis. Most exporters and manufacturers were probably somewhat blinded by the dazzlingly high prices of menthol and the prospect of quick returns, but unaware of the very large total of contracts placed. Neither did they duly consider that the production of mint oil was then entirely controlled by the Japanese growers. In other words, the exporters and especially the menthol manufacturers entrusted themselves entirely to the Japanese field distillers and their shrewd field brokers. Estimates on the quantity of mint oil to be expected from the 1943-44 mint harvest remained entirely paper guess work and, worse, the alqueire Paulista (only 5.9 acres) which is employed in the State of São Paulo, the mint growing region, alone seems to have been confused with the alqueire Minas Geraes or alqueire Rio de Janeiro (11.8 acres) as generally used in Brazil. In their guesses about the quantity of mint oil to be expected from the 1943-44 crop, the menthol manufacturers and exporters seem to have overlooked also any possibility of damage by insects, diseases and especially by weather.

DRAUGHT RETARDED CROP

Indeed a long, severe drought retarded and reduced the crop December, 1943, to May, 1944, so greatly that instead of three cuttings only two were actually harvested. The Japanese growers and intermediaries, well aware of the heavy export contracts the exporters and manufacturers had underwritten, took advantage of the critical situation. The export contracts for menthol had been based upon a price of about 120 cruzeiros per kilo of mint oil (about $6.00) but in view of the oil shortage the prices rose steadily, reaching 300 cruzeiros and more. The mint

Japanese-owned Field Distillery—São Paulo, Brazil

oil disappeared; the grower-distillers claimed that they had none, burying the oil cans and blaming the drought for their inability to fill commitments with the manufacturers who, in most instances, had even advanced money (about 60 cruzeiros per kilo of oil) to the growers. All kinds of undesirable middlemen and speculators appeared on the scene and aggravated the situation. The Japanese field producers simply sold their output to the highest bidder, ignoring their contracts with the menthol manufacturers. Villages and towns in the mint producing regions boomed with a prosperity never before experienced; gambling houses and saloons sprang up overnight, as in the days of California's gold rush in 1849. The actual cost of producing the complete mint oil is about 80 cruzeiros per kilo, prices of 300 cruzeiros being a real gold mine. Japanese field distillers would come from the interior to the nearest village with a can of mint oil, sell it to the highest bidding intermediary and gamble the money away.

FINANCIAL LOSSES

The plight of the menthol manufacturers who lived up to their contracts with importers in the United States became serious and heavy financial losses were incurred by those who wanted to uphold their reputation as reliable firms. Fortunately, most importers in the United States took due cognizance of the situation in Brazil and alleviated the difficulties of the Brazilian exporters by revising their commitments and granting higher prices. Yet, in many ways the North American importers and consumers, too, deserve a great deal of blame in the matter as they started to outbid one another with ever higher price offers for menthol which arrived in the United States only very slowly.

Such was the situation prevailing in Brazil in April, 1944. Since then the harvest 1943-44 has been completed with a total production of about 350 tons of complete mint oil, which permits the manufacture of 175 to 200 tons at the most of menthol crystals from this harvest. Lately the oil prices have risen to about 320 cruzeiros per kilo, the growers now blaming the cold weather for this increase.

As far as the outlook for the 1944-45 crop is concerned, no exact figures can be given. The industry is still too young and too little is known about possible damage by insect pests, diseases or premature dying of the plantations, not to mention the hazards of weather. Through the influx of many settlers and share croppers into São Paulo's producing regions, the acreage is being increased considerably. Some of the wealthy menthol manufacturers hold titles to large tracts of virgin land which they are starting to plant with mint, thus creating their own independent supply of complete oil. The Brazilian government, too, is contributing to further expansion of the lucrative mint industry by distributing planting material, transporting stills to the interior, and giving valuable advice on planting, cultivating, harvesting and distilling, all free of charge. Plantings are also being started in the neighboring State of Minas Geraes. It would not be surprising if during 1944-45 Brazil produced about 400 tons of mint oil but, as said, estimates remain mainly guestimates because shortage of gasoline and traveling difficulties in the interior prevent government inspectors from making detailed surveys of existing and contemplated plantings.

(Editor's note: This article will be continued in an early issue.)

Ahmed, the Old Perfume Merchant

RECENTLY, THE AMERICAN PERFUMER received an interesting letter from one of its friends who has been caught up in one of the innumerable small eddies created by a world at war. He writes of the strange customs of the people with whom he lives. Excerpts of his letter are here given without further comment.

"I've traveled a long way since I last saw you. The Army has not neglected to bestow on me the benefits of travel. I have been permitted a good view of our country, as well as Scotland, England and Algeria.

"My primary purpose in writing to you, however, is not to tell you about myself, but to show you that I have not forgotten THE AMERICAN PERFUMER.

The Old Perfume Merchant

"I am stationed near a small town and get to visit it quite often. It has many things of interest, and my knowledge of French enables me to explore to my heart's content.

"The Arabs are great users of perfumes, males as well as females. It is rather disconcerting to watch a ferocious looking native soldier in his colorful blue uniform, with a naked ten inch dagger thrust through his belt, daubing himself with Evening in Paris! The perfume is used mostly on the hands and hair.

"Ahmed Moullasserdown, the old perfume merchant, by necessity sells his goods in small quantities. His customers cannot afford to buy more than a few grams at a time. He mixes his own essences and oils, which are of pre-war manufacture by the noted French firm Maison Grasse. Ahmed also uses native products imported from Egypt and the Near East.

"He is a very interesting person and speaks French quite well. I always pay him a visit when I'm in town and our animated conversations always bring a crowd. The embarrassing thing about it is that he always insists that I put some perfume on my hands before I leave. Since it would be impolite to refuse, I have to submit to it even though I feel very silly.

"Ahmed was very flattered when I offered to take his picture. He took special pains to set his stand out in the sun where I could get a good exposure. The little boy is his son.

Emulsions, Emulsification and Emulsifying Agents

Factors affecting the stability of emulsions . . . Hydrolysis, inversion and separation considered . . . The contribution of time, motion and vibration

by LOUIS T. MONSON

IN the preceding three sections of this presentation we have set out the essential features of emulsions, viz., that they comprise two immiscible liquids, one oily, one aqueous, and an important third constituent, the emulsifying agent, which is responsible for their stability. Since the third component is so vital to the existence of the emulsion, the properties of emulsifying agents have been discussed in some detail, and a description of the principal classes of emulsifiers has been presented. It is proper at this time to retrace our thoughts briefly and note some of the facts which operate to make the formulation and consideration of emulsions a bit more complicated than the foregoing simplified presentation might suggest.

FACTORS AFFECTING STABILITY

It should be remembered that the stability of an emulsion is dependent on that portion of the emulsifier which is present in the interfacial film between the oily and the aqueous layer, and that only a portion of the emulsifier is so disposed, the remainder being colloidally dispersed throughout the body of the continuous liquid or continuous phase. If there is some influence operating or any factor present which acts to upset the equilibrium or balance between these two portions of the emulsifying agent, this factor has a real effect on the stability of the emulsion. For example, suppose that an oil-in-water emulsion is stabilized by the ammonium soap of a fatty acid. On prolonged standing in the open or on exposure to high atmospheric temperatures, the ammonium soap tends to decompose with the volatilization or loss of ammonia, and a certain proportion of free fatty acid is then present in the system. Free fatty acids have, in general, little power to produce oil-in-water emulsions; if anything, they produce the opposite type or water-in-oil emulsions. As ammonia is lost from the soap dispersed in the body of the emulsion, a compensating small proportion is withdrawn from the ammonium soap present in the stabilizing film between the water and the oil, to maintain the balance or equilibrium, previously referred to. This results in the presence, in the film, of a certain amount of free fatty acid in replacement of an equivalent amount of ammonium soap. If the stability of the emulsion depends on the presence of a certain minimum amount of ammonium soap in such film, the stability is obviously reduced by abstracting a fraction of such ammonium soap from such film, by conversion into free fatty acid. In time, the reduction of emulsifier may reach the critical level, and the emulsion will then "break."

In the same way, one may attempt to prepare an oil-in-water emulsion using a sodium soap or a potassium soap, the aqueous phase of the emulsion comprising simply city water, and may fail to produce a satisfactory product. Or he may proceed to dilute a previously prepared emulsion with such city water, only to discover that such dilution is fatal to the stability of the whole. In such instances, the cause of failure probably lies in the fact that the water employed contained hardness, i.e., soluble inorganic calcium and magnesium salts; that such salts reacted with the alkali soap emulsifier to produce calcium and magnesium soaps; and that such soaps do not possess the high emulsifying power of the original alkali soap. Anhydrous calcium and magnesium soaps are essentially insoluble in water, but are soluble or dispersible in oily media. Hence, from Bancroft's Rule, discussed in Part One hereof, they would be expected to stabilize water-in-oil emulsions—which is the case, as the compounders of commercial greases have known for generations. (If they are prepared in aqueous solution, the hard water soaps are in hydrated form. Under such conditions, they probably have some water-wetability and some slight power to stabilize oil-in-water emulsions; but this property is so slight as to be almost completely ignored in the literature.)

STABILIZING EMULSIONS

Similarly, if one stabilizes an emulsion by means of a water-soluble soap, and if the emulsion contains free mineral or organic acid at some later stage, the chances are strong that the emulsion will be destroyed; because the free acid (so long as it is stronger than the very weak fatty acid present in the form of soap) will "split" the soap and liberate the free fatty acid, including that present in the emulsifying film. That is, it will destroy the emulsifier. On the other hand, if one employs an ammonium soap as the emulsifier in an oil-in-water emulsion system, and the emulsion later comes in contact with an alkaline solution like caustic soda, or even sodium carbonate, bicarbonate, or borate, the ammonia will slowly be driven off as a gas, and the sodium soap will be formed. Since both ammonium and sodium soaps are water-dispersible, the chances are strong that the emulsion will not break; but its properties may be visibly affected by the transformation of the emulsifier.

Common salt is used in the manufacture of soap to "salt out" the product. Consequently, it would be expected that adding salt to an emulsion stabilized by soap would affect the equilibrium between the soap present in the emulsifying film and that colloidally dispersed throughout the aqueous phase of the emulsion. Whether this would enhance or reduce the stability of the emulsion would depend on the specific characteristics of the soap employed. For example, a soap made from a lower fatty acid may be sufficiently water-dispersible that the larger proportion of the total amount present in the emulsion is dispersed throughout the water phase rather than concentrated in the emulsifying film where it is desired. Addition of a proper small proportion of salt may act to reduce the colloidal solubility of the soap and force it into the region of higher surface-activity, i.e., force it into the emulsion film. In at least one instance, a material which is not a satisfactory emulsifier in fresh water becomes satisfactory in the presence of relatively concentrated salt solutions.

EFFECT OF HYDROLYSIS

Emulsions sometimes resolve spontaneously into their component water and oil on standing for protracted periods of time, even though favorable temperature and other conditions are maintained to the limit of the knowledge of the maker. In some such instances where the emulsifying agent is a salt, this resolution proceeds by virtue of a process known as hydrolysis, a reaction between water and a chemical compound, or, more strictly, between water and the ions of such compound. In a salt (the product of reaction between an acid and a base), hydrolysis is negligible if both acid and base are "strong" or highly ionized. Where either is "weak" or slightly ionized, hydrolysis proceeds to a degree; and where both are quite weak, hydrolysis may be great, so that in time or on extreme dilution only the original acid and base are present, in free form, the salt being completely destroyed. In the class of emulsifiers, salts of strong acids and strong bases are exemplified by the alkali metal sulfates of the higher alcohols, the alkali metal sulfonates, and the alkali metal sulfates of the fatty acids. Alkali metal soaps are examples of salts of strong bases and weak acids; ammonium salts of organic sulfates or sulfonic bodies typify the weak base-strong acid combination (although it must be remembered that, compared with certain organic amino compounds, ammonia is still relatively strong); while ammonium soaps are members of the class of salts of weak acids and weak bases.

Ammonium soaps would therefore be expected to suffer appreciable hydrolysis, which is the case. Also, in this instance, the decomposition is accelerated by the fact that the ammonia liberated in the hydrolytic process is volatile and may be removed progressively from the system by volatilization. Fatty acid sulfates and fatty alcohol sulfates are relatively resistant to hydrolysis in alkaline systems; but in acidic media they hydrolyze at appreciable rates. True sulfonates are stable in alkaline solutions, and are subject only to very slow hydrolysis in acidic solutions. These several facts, together with the fact that common soaps are decomposed immediately by free acidity, suggest why a trace of alkalinity so commonly acts to stabilize an emulsion and prevent its separation or resolution.

Non-ionogenic emulsifiers are not substantially susceptible to decomposition by hydrolysis, although the presence of small proportions of acids may accelerate their decomposition to detectable levels.

Exposure to air may cause deterioration of an emulsion by virtue of the oxidation of one or more of the constituents by the oxygen of the atmosphere. For example, one trade bulletin at hand notes that a certain emulsion of linseed oil in water, stabilized by a triethanolamine soap, should be stored in an air-tight container, "as oxidation of the oil decreases the stability of the emulsion."

DESTABILIZED EMULSIONS

In some instances, emulsions are destabilized and break because the emulsifier is susceptible to destructive bacterial action. In such cases, the difficulty may be met by incorporating a suitable bactericidal agent in the original formula. A recently patented shaving cream employs an emulsifier which, the inventor points out, ". . . is not subject to bacterial contamination, making the use of antiseptics unnecessary. . . ."

In instances where an emulsion is stabilized by an anion-active emulsifier of the type discussed in the preceding section of this article, the addition of a cation-active reagent is usually destructive in effect. The anion-active and the cation-active reagent combine with and mutually precipitate each other, and the original emulsifying agent no longer exists as such. The converse is likewise true, that anion-active materials tend to destroy emulsions stabilized by cation-active emulsifiers.

In some systems, components are present which operate as antagonistic emulsifiers, so that, while one acts to produce an emulsion of the oil-in-water type, the other is simultaneously acting to produce an emulsion of the water-in-oil type. Which emulsifier prevails and which type of emulsion is eventually formed depends on a number of factors, including the relative concentrations of the respective antagonists, the order of addition of the various components in the preparation of the emulsion, etc. This phase of the question is too intricate for further development here, although it is an extremely interesting field of investigation. It will suffice to say that sometimes one type or the other is formed; sometimes both types of emulsion co-exist; in other instances a water-in-oil-in-water or an oil-in-water-in-oil multiple emulsion may be produced; and in still others, where the balance of antagonistic emulsifiers is critically maintained, neither type of emulsion can exist in stable form. While the presence of antagonistic emulsifiers is usually avoided, there are instances where they are intentionally incorporated in an emulsion formula, and become operative at specific required stages in the preparation or use of the emulsion.

INVERSION OF EMULSIONS

In some instances where antagonistic emulsifiers co-exist in a system, inversion occurs under suitable conditions. This means that the emulsion, which was originally of one type, suddenly or progressively becomes an emulsion of the opposite type. For example, in one patented composition, a cosmetic base is prepared using super-glycerinated fats (the lower glycerides or lower glyce-

ryl esters of fatty acids) and a small proportion of soap, the patent specification stating: "Our cosmetic creams are most satisfactorily prepared at or above the temperature at which the ester becomes completely melted or soluble in the oil used. . . . In the completely molten condition, our creams are essentially emulsions of the water-in-oil type. On cooling, the phases in part become inverted and there results a compound emulsion of no simple type." The solid glyceride evidently has different emulsifying powers at different temperatures; and in the liquid state, as opposed to the solid state, this single compound acts as an entirely different emulsifier.

Inversion does not necessarily involve antagonistic emulsifying agents, as the foregoing example suggests. In a certain paper on inversion, the effect of a soap (sodium palmitate) in producing inversion was examined at different temperatures and different concentrations. It was found that, for a given temperature, increasing the concentration of soap increased the likelihood of producing water-in-oil emulsions, although at the highest temperature employed (77° F.), the oil-in-water emulsion originally produced was not inverted at any concentration of soap up to 0.03 normal. In these same experiments it was found that lower temperatures favored the formation of the water-in-oil type, as did an increased oil /water ratio.

Electrolytes influence inversion in some instances. For example, addition of common salt to an emulsion of the oil-in-water type stabilized by a water-soluble alkali metal soap can be shown to produce a water-in-oil emulsion on shaking, under controlled conditions.

In absence of any emulsifying agent, the type of dispersion produced on shaking distilled water and a neutral petroleum oil appears to depend on the relative proportions of the two materials. If the water exceeds a critical proportion range, the oil appears as droplets in a continuous body of water; if the oil is in excess of this critical range, the opposite is true.

Other factors may influence the inversion of emulsions. For example, an observed inversion of cod liver oil emulsions during manufacture is said to be due to air oxidation of oil.

Time in general operates to destabilize and destroy emulsions. Some of the factors which become important with time have been mentioned above, e.g., decomposition of the emulsifying agent by hydrolysis, volatilization of one or more of its constituents, changes of physical state, contamination, etc. All of these are more important when allowed to operate over increased periods of time. Nevertheless, a more important consideration as regards the effect of long standing on emulsion separation is probably to be found in the effects of density difference and the force of gravity.

EMULSION SEPARATION INFLUENCES

When the two liquids of an emulsion are of the same density, there is no tendency for either to settle to the bottom of the container, regardless of the size of the drops that might be present or the time allowed for sedimentation. Where a density difference does exist, the rate of sedimentation is expressed in Stokes' Law, which says that the rate of settling will increase with the density difference between the liquids and with the size of the droplets of the dispersed material; and will decrease as the viscosity or body of the dispersing liquid increases. The law is merely an exact mathematical statement of what is common knowledge. Examining it, we see that if the size of the drops of dispersed liquid increases, sedimentation is materially accelerated. The drops which settle may carry with them their enveloping film of emulsifying agent, so that the aged emulsion is still completely stable although the dispersed liquid may be said to have "creamed." (This word appears to be used regardless of whether the drops rise or settle.) However, once they have creamed, the drops are in close contact and are subject to pressure from the weight of the layers of similarly enveloped drops above them. Any slight frailty in their envelopes results in coalescence, under such conditions, the smaller drops being squeezed by reason of their higher internal pressures into the larger ones, to increase the size of the latter still further. And every time a drop doubles its diameter, it creams four times as fast. As originally present throughout the emulsion, the drops had to depend on random contacts (as promoted by bombardment by the molecules of dispersing liquid—Brownian movement) for coalescence; and if the emulsion were a dilute one, i.e., contained a relatively low proportion of dispersed liquid, the chances for collisions were small.

VISCOSITY OF EMULSIONS

As time runs on, then, small movements of drops, which would escape the eye on closest scrutiny over short periods, become material; and visible creaming of the emulsion results. The chances for separation of the liquids into two phases are materially promoted by such creaming caused by the differences in density of the liquids in the emulsion.

Viscosity is the property of a liquid represented by its "body" or "consistency." Ideally viewed, a liquid should respond to any applied force by moving or flowing to a degree determined by the force applied. Some fluid systems depart so far from this ideal state that a considerable force must be applied before any flow whatsoever occurs. Such systems are said to possess plasticity rather than viscosity. In the case of emulsions, several separate thoughts regarding viscosity must be clearly distinguished. The first is that each of the component liquids possesses viscosity, which is an inherent or internal property arising from the resistance to flow caused by the "friction" or forces acting between the molecules of the liquid. Water and gasoline have definite although very low internal viscosities compared to, for example, glycerine. In all cases, the liquids do possess measurable viscosities, however, which decrease as the temperature is increased.

When a dilute soap solution, which has substantially the same viscosity as water, is shaken with gasoline, an emulsion is produced which has an increased viscosity, the amount of increase depending on the relative proportions of the two liquids, the degree of emulsification, the temperature, and possibly other factors. This emulsion viscosity is a structural viscosity, and is quite independent of the internal viscosity of each component liquid. This means that two liquids having low viscosities can be processed to produce a very viscous emulsion—although a liquid having a high viscosity will probably produce an emulsion of even higher

viscosity. Emulsion viscosity arises from the resistance to motion of the many particles of dispersed liquid, and might be compared to a mass friction effect, just as internal viscosity might be called a molecular friction effect.

Some years ago the author prepared the most stable emulsions he possibly could from a number of crude petroleum oils and oil field waters, using increasing proportions of water, which in these emulsions was the dispersed phase or dispersed liquid. He found that, when the water/oil ratio was 10/90, the emulsion viscosity was 1.3 times that of the crude oil. When the water/oil ratio was 20/80, the viscosity was increased to 1.9 times that of the original oil. When the ratio was raised to 30/70, the viscosity jumped to 2.8 times the oil viscosity; and when the ratio was made 40/60, the viscosity was approximately 4 times that of the oil alone.

High structural viscosity is a stabilizing influence in emulsions. With high viscosity there is commonly a presumption of emulsion stability in the mind of the lay observer; but viscosity alone is not a satisfactory index of emulsion stability. The manufacturer might have stirred or agitated the component liquids and emulsifying agent until the viscosity of the mass was so great that additional agitation was of no benefit. The resulting emulsion might have contained a considerable proportion of large drops, which would still on long standing, especially at slightly elevated temperatures, have separated.

TRUE EMULSION STABILITY

One way in which true emulsion stability may be examined is to observe the viscosity at different temperatures. If the stability is due to the structural viscosity produced by high percentages of dispersed liquid rather than to the presence of many very small or stably dispersed drops of such liquid, the viscosity may suddenly break at some higher temperature. If the emulsion is truly a stable one containing many very small droplets of stably dispersed liquid, the viscosity generally continues as a straight line on the chart, even at such higher temperatures. Of course, particular emulsions have specific properties; and exceptions to these general statements may appear to hold in some cases.

Resistance to flow is sometimes exhibited by emulsions having quite large droplets of dispersed liquid, which are clearly visible to the naked eye. These systems appear quite stable so long as they are not molested. However, when they are stirred rapidly or allowed to move by gravity flow or by pumping, they are almost completely resolved or broken. The author has seen such emulsions, produced in laboratory procedures, stand in separatory funnels without change or separation for days; but he has resolved them substantially completely by the simple expedient of opening the stopcock and allowing the whole mass to run into a beaker. Replacement in the funnel could then be followed by complete withdrawal of the lower liquid, an operation previously impossible. The same phenomenon occurs in some heavy sludges of crude oil emulsion in oil field tanks. These have been effectively broken merely by opening a valve to a connecting tank and allowing the sludge to be forced through the pipe to the other tank by virtue of the pressure of the head of oil or sludge in the first tank. The property here involved is not the internal viscosity of the component liquids or the structural viscosity of emulsions having high percentages of dispersed liquid. Rather, it is the rigidity of the emulsifying film between the two liquids. The film has sufficient rigidity to cause the emulsion to exhibit unexpectedly high stability; but slight shock is all that is required to shatter the film and allow coalescence of the liquids. It is as if the film were made of thin glass and were equally fragile.

Emulsions of this type break so readily that the vibration involved in transporting them in commerce is often sufficient to accomplish their substantially complete resolution. This resolution sometimes occurs in more stable emulsions, for in general vibration or gentle motion is destructive of emulsions, in some degree. The opportunities for contacts (and coalescence) between the dispersed particles are increased; and the shattering of rigid emulsion films is promoted by such slight motion.

Viscosity is determined by a number of methods, none of which requires elucidation here. It should be mentioned, however, that in recent years new types of viscosimeters have been developed which greatly facilitate the determination of this important property of liquids. In one instrument, one merely inserts a metal paddle into the liquid or emulsion, starts a small motor which drives the paddle, and reads the viscosity in absolute units from a pointer on a scale. In another instrument, continuous values of viscosity are recorded on advancing chart paper. These devices should encourage interest in the viscosity of liquid systems, which property certainly merits further scientific investigation and clarification. No consideration will be given here of the companion property, plasticity, or to the relationship of, or the confusion between, the two properties. Such consideration lies outside the scope of this descriptive article.

(Editor's Note: This article will be continued in an early issue.)

Paper Conservation

Co-operation of the nation's 50,000 retail druggists in a uniform code of wrapping practices to effect greater conservation of paper is being enlisted by the National Wholesale Druggists' Association at the suggestion of the War Production Board, Conservation Division, it was announced today by Dr. E. L. Newcomb, secretary of the association.

The 211 active members of the association, who form a national network of distribution for health supplies, have taken over the task of contacting retailers in their respective territories and are distributing 100,000 copies of a poster entitled "Our Pledge to Conserve Paper."

The pledges, printed in the form of cards 8 by 10 inches, cite the retailer's readiness to:

1. To ask customers to accept packaged items, whenever practicable, without wrapping.

2. To place purchases, unwrapped, in the customer's own shopping bag or container whenever possible.

3. To use as little wrapping paper as possible in making packages.

4. To wrap for protection rather than for appearance.

5. To salvage all paper and paperboard.

Modern Make-up by Matchabelli

A MOOD is a fragile thing; almost impossible to conjure up, tanalizing in its evasiveness, easily dispelled.

Burning leaves in the Autumn, a fragment of an aria, the touch sense imparted by smooth jade, a passage from a well remembered poem, are often enough all that is required for some of life's most poignantly pleasant moments.

Of course, the olfactory sense is one of the most powerful builders of illusions. It is this which is the whole reason for being for the perfume industry. It has been used by the great and the humble since before the time of written history to establish a mood. Cleopatra was well aware of it, but her use of perfume was antidated by eons of time in China and in the other Far Eastern countries. Perfume, as incense, has been used by the Christian and pagan churches, as an undertone for worship or of sacrifice. In other times a specially blended essence was sprayed through huge Buckingham Palace before state functions. Judy O'Grady takes a dab at either ear lobe before a date with the boy friend. Sense of smell . . . the intangible builder of moods.

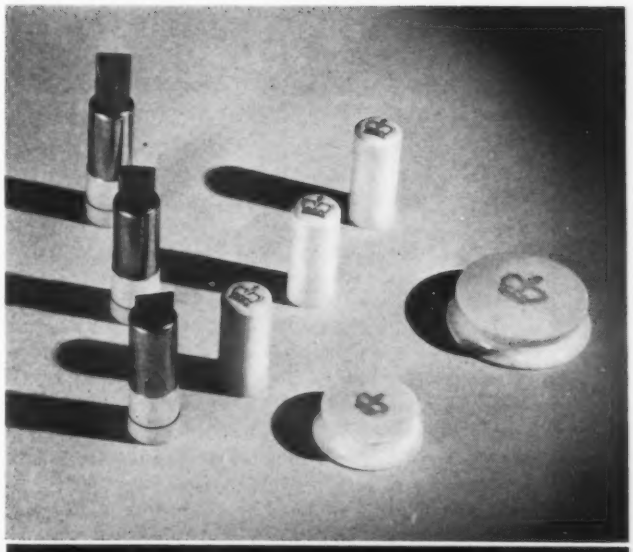
When an individual uses a perfume she does so to create a certain aura, either to fit her own being to the web of outside life, or to attempt to influence another being to a predetermined pattern. Through this agency she may be gay, sophisticated, demure, sensuous—all these through her selection of odor.

Modern perfumes are often a far cry from those of a few years ago in complexity, but to the average user they are so subtly compounded as to give the impression of simplicity. It is this seeming simplicity which leads to disharmony. How grating it must be, consciously or unconsciously, to use a lipstick scented of mimosa, a powder of lavender, a rouge of gardenia. The creating of an illusionary mood under these circumstances is impossible—there are too many conflicting factors to permit this to occur.

Prince Matchabelli, recognizing the inconsistency of such chaotic methods of make-up, has placed on the market a line brand new in the industry. The items of this line may all be used with symphonic blending as they are all scented with Duchess of York, and since the same perfume is used throughout there is no clashing when the various items are used.

While appeal in this new line has been quite properly keyed to the idea of Duchess of York perfume, the packaging has not been overlooked. Jars are of China. The tall glass bottle is treated to harmonize with the jars. The colors selected are aquamarine and ivory, with touches of white and gold appearing in the crowns.

The complete make-up sequence consists of: foundation, five shades, cream and liquid; face powder, eight shades; lipstick, eight shades; rouge, four shades, cake and cream; eyeshadow, seven shades; and mascara, two shades.



United Kingdom Essential Oils Control

by OUR BRITISH CORRESPONDENT

THE following prices have been fixed for oils imported by the Ministry of Food under the 1944 program. These prices may be altered at any time if circumstances so warrant. (A.R. equals Approved Representatives of overseas shipper. D.P.D. equals Datum Period Distributor.)

Notes: (1) Purchase tax applies to wormseed oil only, and the amount of such tax will form an addition to the price to the user. (2) The price on the sale to a user will be increased by the authorized charges for breaking bulk where incurred at the rates laid down in the circular quoted in THE AMERICAN PERFUMER. All these circulars relating to the scheme have been given in previous issues of THE AMERICAN PERFUMER. The following are additional instructions issued by the Control in circulars 10, 11 and 12.

store basis after rectification in this country. In this case D.P.D.s may charge 2d. per lb. to cover the expenses of insurance and delivery to their buyers.

LEMON OIL

At the time the Advisory Committee made up the description for contract purchases for the various oils, it was not visualized that supplies of Sicilian lemon oil would be available. In the future, contracts for lemon oil will be described by:

Lemon oil (cold pressed) g.m.q. of origin, genuine unadulterated.

Lemon oil (distilled g.m.q. of origin, genuine unadulterated, or

Lemon oil-Sicilian (machine made) g.m.q. genuine unadulterated.

EXAMINATION OF OILS

Contrary to the practice hitherto pertaining to lend-lease and other oils out these duties prior to dispatching.

A D.P.D. having taken up oil from an Approved Representative and finding that it is not required by customers will be considered by Allocations Control to be holding that oil as delayed allocation stock.

A D.P.D. is entitled to reimbursement of any expenses incurred prior to re-allocation, e.g., interest, rent and insurance, but is not entitled to receive any remuneration if re-allocation takes place within twenty-eight days from the date of the original allocation. The interest, rent and insurance will commence from the day the D.P.D. notifies the Secretary that he has much oil on hand.

Whilst Approved Representatives are permitted to do so, there is no obligation upon them to hold consignments of oil if for any reason immediate allocation cannot be made. If Approved Representatives are unable to carry out the duties detailed in the Form of Undertaking which holders of much stocks are called upon to give, they may notify the Secretary that they do not wish to be

	Lemon Oil Distilled		Lemon Oil Cold pressed or Sicilian		Tangerine Oil		Bergamot		Camphor		Coriander		Fennel		Peppermint		Pine needle		Vetevert		Wormseed	
	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d	s	d
Notional c.i.f. price	10	0	15	0	28	10	20	10	1	6	114	6	9	9	32	6	11	3	33	8	13	1
Ministry's landing charges		3		4		4		4		1½		6		3		4		2		4		4
Ministry's price to A.R.	10	3	15	4	29	2	21	2	1	7½	115	0	10	0	32	10	11	5	34	0	13	5
4% Levy on Notional c.i.f.		5		7¼	1	2		10		1		4		5	1	3½		6	1	4		7
2% A.R. on Notional c.i.f.		2½		3¾		7		5		½		2		2½		8		3		8		3½
A.R.'s price to D.P.D.	10	10½	16	3	30	11	22	5	1	9	122	0	10	7½	34	9½	12	2	36	0	14	3½
D.P.D.'s 5%		6½		9½	1	7	1	1½		1	6	1		8½	1	8½		7	1	10		8
D.P.D.'s delivery charge		4		4		6		4		2		9		4		6		4		6		4
D.P.D.'s price to user in original packages	11	9	17	4½	33	0	23	10½	2	0	128	10	11	6	37	0	13	1	38	4	15	3½
			Plus import duty at every stage							..	11	6	1	0			1	1	3	5		

LANDING AND DELIVERY CHARGES

Certain oils have been added to the list of exceptions to the general scale of charges laid down, to cover the expenses incurred by D.P.D.s in delivering goods to buyers warehouse. These additional oils and the charges applicable to them, are as follows:

Of Oils Imported under License.—

From c.i.f.:

Cinnamon Bark Oil—

in tins ..... 2d. per oz.

in bottles ..... 2½d. "

Of Oils Imported by the Ministry.—

From ex store:

Clary Sage Oil ..... 7½d. per lb.

Coriander Oil ..... 9d. "

A special arrangement has been made in the case of cedarwood oil which will be imported under license, but will be sold to D.P.D.s on an ex-

imported by the Ministry of Food, it has now been decided that the responsibility for sampling and analyzing shall rest with D.P.D.s who will carry

concerned, and upon receiving such intimation the Secretary will arrange for a D.P.D. to take over the oil as soon as possible.

Soluble Coffee to Uniformed Forces

During the remainder of the 1944 calendar year practically all soluble coffee produced in the United States will be used to meet the requirements of the American uniformed forces.

Approximately 20 per cent is to go to the American prisoners of war through the Red Cross. The remaining amount will be purchased by the Quartermaster Corps for use in the Army, Navy and Marine Corps. Red Cross purchases will amount to about 3,000,000 pounds.

The Nation's 1944 production of soluble coffee will amount to about 18,000,000 pounds, of which little has been for distribution to civilian markets.

Its principal use is in certain types of emergency rations where the brewing of regular coffee is difficult. The powdered coffee may be stirred into either hot or cold water.

Emergency ration coffee is packed in 5-gram, aluminum foil sealed packets. It is also put up in 4-ounce cans for troops not on emergency rations.

Cans for the Army are given a special coat of camouflage paint.

A Compilation on Skin Chemistry

An authority and author of Treatment of Common Skin Diseases; Cosmetic Dermatology; and other texts discusses the physical chemistry of the epidermis

by DR. HERMAN GOODMAN

RECENT discoveries indicate the skin possesses multiple organ functions within one complex organ. The water content of the skin is 74%. This is the lowest for body tissues other than the skeleton and fat. The internal organs, for example, have a water content of 78%. In infancy and in old age the water content of the skin is higher than at other periods. The greatest part of the water content is in the connective tissue of the skin. Only 16% of the water lies in the horny layers. Despite its lower percentage of water content than other organs, the skin has an important water content of the body, 1/6 of all the water stored in the body is stored within the skin. Water is lost from the body through the skin for temperature control. About ¼ of the water lost from the body is through insensible perspiration. Insensible perspiration is held to be direct water passage through the skin, not through the sweat apparatus. It has been estimated 500 to 600 c.c. of water pass through the skin daily as insensible perspiration. It has also been estimated about 950 c.c. of water are lost through the skin while in the basal metabolic state. Exertion increases the amount of fluid lost through the skin.

Sodium Chloride: The skin is the richest chloride depot. One-third of the chloride of the body rests in the skin. The skin holds an average of 257 mg.% of chloride; 28% to 72% loss of chloride from the body is through the skin. The insensible perspiration has a content of sodium chloride estimated at 0.06%. Sweat gland perspiration at work or under nervous excitement has a very high content of chloride. Such loss of chloride must be restored through ingestion of sodium chloride pills and water by workers in order to avoid saline fatigue and exhaustion. More sodium chloride is lost during work in exertion perspiration than in perspiration lost in response to temperature control.

Potassium: Salts of potassium are said to be found in the epidermis, the hair apparatus, and in the glands. It has been estimated 100 grams of dry skin contain 46 mg.% of potassium.

Calcium: Calcium of the skin is held to be of little importance in the metabolism. The calcium content of the skin increases with age. There is a reciprocal relation between calcium and potassium. Calcium is said to diminish in inflammatory processes. Calcium is held to be present in connective tissue low in potassium. Calcium enters the epidermis after any damage, as, due to X-ray, extended light exposure, etc. The calcium content of the skin has been estimated as 290 mg.% for each 100 grams of dry skin. *Magnesium:* The magnesium content of the skin is given as 30 mg.% for 100 grams of dry skin. *Sodium:* Sodium is estimated as 35 mg.% for 100 grams of dry skin. *Sulfur:* Sulfur is found bound in keratin to about 50-60 mg.% of skin; and about ten times as much in hair. *Phosphorus:* Fresh samples of skin have been estimated to contain 0.04-0.08% of phosphorus. Infants have increased phosphorus to 0.12%. *Fluorine:* The fluorine content of the skin is slight although higher than for muscle. The intact skin is held to contain 1.6 to 1.9 mg.% compared to 0.7% for infants. The keratin and horn products of the skin are held to have 8 to 16 mg.% of fluorine.

Bromine: Bromine normally is found to 0.5 mg.%. It is retained on ingestion of large doses of bromine and is said to replace and to be replaced by chlorine in the skin tissues. *Iodine:* Iodine is not demonstrable in normal skin tissue, according to some observers. It is held to be retained after ingestion over a long period of time. Iodine in the skin in such circumstances is held to be present after all iodine is lost from the lungs, for example.

Aluminum: Aluminum has been estimated to be present in the skin to 30 mg.%. Arsenic has been held to be present in normal skin to the extent of 0.01 mg.%, and in hair to 0.05 mg.%.

SWEAT

Perspiration from the body has been estimated as from 600 to 800 c.c. for each twenty-four hours. Specific gravity has been estimated as 1001 to 1020. The solid content has varied between 0.8-2.8%, 75% of which is sodium chloride.

The potassium content of sweat has been estimated as between 0.009 mg.% and 0.14 mg.%. A figure for phosphorus in perspiration has been given as 0.015 mg.%. Iodine, arsenic, and boric acid have been found in perspiration after ingestion of these by mouth. Other ingredients of perspiration, reported as having been found at various times, include proteins, ether, sulfuric acid, phenol, skatoxyl, indoxyl, among others of this group. Cholin and products similar to cholin have been reported present in perspiration to 1 mg.%. Cholin increases in perspiration due to heat. It is found in the perspiration of menstruating women to be as much as 100 times normal content. Diabetics show sugar in perspiration. Profuse perspiration of diabetics leads to lowered blood sugar.

FATS AND LIPOIDS OF THE SKIN

The fat content of the skin consists of (1) glycerides of fatty acid, as stearic, palmitic and oleic acids, and other free fatty acids; (2) nonsaponifiable quotients, as, cholesterin and the higher fatty alcohols and the esters of their fatty acids; (3) phosphorus combinations of fatty acids, as, lecithin, and partition quo-

tients as cholin. Eikosyl alcohol and high molecular fatty acids in sweat are held to be the cause of odor. Esters of cholesterin pass through the skin and not through the gland apparatus. The esters of cholesterin content of the horny epidermis is removed with the scurf skin. The cholesterin content diminishes from 211 mg.% to 102 mg.% in old age. The fats of the skin vary with the site and combination of secretory fat and cell fat. The cholesterin content of secretory fat has been estimated between 1.4-2.8%; cholesterin of cellular fat has been estimated to 16-20%. The subcutaneous fatty layers have glycerides of fatty acid reported as stearic acid 4.3-6.3%, palmitic acid 17-21%, oleic acid 65-85%. Unsaponifiable fat in the subcutaneous fatty layers has been estimated as 0.33%. Glycerides of myristic acid and lauric acid as well as a few other free fluid fatty acids are also found in subcutaneous fat layers. The iodine number of fat in infants is lower than at any other time. It rises within the first year to normal for adults. The subcutaneous fat is the richest source, except for the adrenals, of cholesterin. The skin of the superficial skin layers contain high molecular weight alcohols, especially cholesterin. Content in the superficial skin layers is much higher than the cholesterin content of subcutaneous fat. The cutis contain lipoid combinations. The fat content of human skin varies from 0.7 to 10%. The fat of the superficial layers is a colloidal mixture of uniform fat phase without inclusion of water. The fat content of the skin varies with the location. The nasal ridge, the alae-nasae, the chin and the ears have the highest fat content; the neck and chest and the shoulders have the lowest fat content. About 2 grams of fat are removed from the body daily, less at low temperature than at high temperature. The loss of fat is caused by nerve reactions. The sweat secretions do not influence the volume of the fat lost daily nor does the perspiration on exertion influence the fat lost through the skin.

Qualitative variations of the fat content are found in pathological conditions. In seborrhoea oleosa there is a high iodine number and a high saponification value. The skin fat in this condition has a lower melting point and a lower cholesterin content than normally. It possesses an increase of free and non-saturated fatty acids. The scales of psoriasis and icthyosis are reported free of cholesterin. The skin of diabetics and of experimental bromide acne has diminished sebum. It is claimed experiments have demonstrated an antiseptic bactericidal quality in skin fat and hair cerumen. Glycogen is said to be demonstrated only in degenerating cells of the sweat gland, the outer hair root cells and the sebaceous glands. High glycogen content is found in the skin of foetuses and under certain pathological conditions. The dextrose content of the skin is reported as 40-50% of the blood sugar.

Albumen of the Skin: The albumin content of epidermis and dermis varies very much. The keratin of the epidermis is insoluble in water, alcohol, and ether. It has a high content of tyrosine and cystin sulfur. Unna classified the skin keratin as (a) found in the epidermis; (b) found in the nail; (c) found in the hair.

The albumin of the cutis is found as collagen in the complicated structure of the connective tissue and as elastin in the elastic fibres. The skin relies upon sulfydryl for its redox system, or the intricate chemistry involved in its reciprocal reduction oxidation needs. Various ferments are also present in the skin.

PHYSICAL CHEMISTRY OF THE SKIN

The acidity of the skin is greater than the acidity of the blood. It is greatest in the basal cells and reduced in the horny cells. The P_h of the epidermis is influenced by sweat secretion. Acid reaction of the epidermis is absent in those pathological states with absence of superficial layers and those with moist superficial layers. Removal of the upper layers of the epidermis causes a return of the acid P_h. The presence of the acid reaction is held to assist bactericidal activity.

GAS EXCHANGE OF THE SKIN

Oxygen is absorbed and carbon dioxide discharged through the skin. The volume of gaseous exchange depends on the thickness of the epidermis and the width of the capillary blood bed. The exchange in human skin is very limited, at most it is only 127th part of the oxygen inspired by the lung, for example, and is not sufficient to meet the requirements of the skin. The carbon dioxide output has been estimated at 7 to 9 grams per day. It increases with rise in temperature to the point of secretion of sweat. The maximum carbon dioxide output is fourfold normal including the increased production through the skin sweat glands. Certain pathological conditions, immersion in carbon dioxide baths, influence the output of carbon dioxide from the skin and the acceptance of oxygen through the skin.

Epidermis and dermis relations to physical injury depends upon the presence of elastic tissue and collagen tissue. Osmosis through the epidermis depends upon the water content of the skin, the protein content of the skin and the permeability of the blood capillaries. The presence of hair, sweat, blood vessels, and nerves also influence the reaction to physical injury. The presence or absence of a debatable basal membrane determines the relation of epidermis and dermis. The existence of indentation from the underlying limits of the basal cell layer into the true skin is accepted. The epidermis is resistant to chemicals. The presence of insensible perspiration is claimed to prove the permeability of the skin from within outward. The loss of water directly through the skin is independent of the temperature, air circulation, clothing, or covering. Three hundred grams of water are said to be lost daily through insensible perspiration. The volume of gas lost is held to be very small. The water exchange through the skin is held to be by physical diffusion of tissue fluid through the thin covering of the horny epidermis. The insensible perspiration differs from physiological perspiration which takes place through the sweat apparatus. In the absence of sweat gland apparatus in the skin, the water loss, to 30° C., is the same as for persons with sweat apparatus. After a temperature rise from 30° C. the loss of water is greater in normal persons possessing sweat apparatus. The internal temperature rise is greater if not abnormal in persons devoid of sweat apparatus. The same applies to temperature and perspiration after exertion. These studies were made possible to some degree by the repression of the perspiration by the

administration of atropine. It would appear the fluid in the cell spaces exist in a colloidal state. The lipoids in the skin are water soluble, the content varies with the temperature. The lipoids vary according to the nature of the animal, as, warm-blooded versus cold-blooded. The effectivity of local anesthesia by skin application depends in great degree on the status of the lipoids in the superficial skin tissues. The state of emulsion, or colloidal phase, determines whether an aqueous solution or an oily solution of the anesthetic will penetrate the superficial horny layers and reach the nerve terminals in the skin.

TEMPERATURE PROTECTION

The transmission of heat through the epidermis varies with the thickness, the location, the age of the individual, the fat content, the water content, the extent of the blood bed, the speed of the blood circulation, the presence of perspiration, and the progress of epidermic cell formation and dislodgement from the surface. Dry skin transmits heat differently than moist skin. No actual measurements of the transmission of heat through the living skin of a human being is available. Certain figures have been published. We quote them as given:

leather	0.000048
olive oil	0.00033
water	0.0014
epidermis estimated	0.0011

Fresh skin transmits heat less effectively than similar thickness layer of latex membrane according to another estimate.

TEMPERATURE SENSATION

The temperature of the skin varies with the internal temperature. It is constant relative to the temperature of the surrounding air. Temperature sensation of different objects at room temperature varies with the object—for example, wool gives the sensation of warmth, metal gives the sensation of cold. This variant of sensation of objects of the same temperature depends upon the rate of diffusion of heat from those objects. Temperature sensation is variable, the hot and cold points do not tire by stimulation.

HEAT APPLICATION TO THE SKIN

Exposed to temperatures of 40 to 50 C. the skin temperature remains at 38 C. This is due to the rapid conduction of heat to the part. In fever the temperature of the skin rarely exceeds 40 C. An application to the superficial skin 12 to 13 C. above normal results in a rise in the sub-cutis of only 3 to 4 C.

SALT LOSS THROUGH THE SKIN

Salt loss through the skin is through insensible perspiration normally. Perspiration on exercise, exposure to heat, etc., is through the sweat gland apparatus. Imbibing fluid for replacement of large losses of water through perspiration does not make this fluid available for the tissue needs unless accompanied by salt. The permeability of the cutis is negligible as far as water is concerned because it is difficult to actually moisten the skin. Lipoid soluble materials can be absorbed. Ointment vehicles help lipoid soluble absorption as do immersion baths. Absorption through the skin is increased by fever. It is reduced in heat and in edema of the skin. Absorption through the skin probably depends on the emulsion phase of the material applied to the skin as well as to mechanical massage.

Spanish Olive Oil Shipments

Shipments of edible olive oil from Malaga, Spain, to the peninsula and Spanish possessions amounted to 10,301,222 kilograms, and of the inedible oil to 51,246 kilograms for the month of May.

Stocks are high and shipments are expected to continue on a large scale for the remainder of the year.

Bulgarian Soap Picture

The soap supply in Bulgaria is acute. Supplies are too limited to permit regular rationing. When soap is available the Government issues special cards to insure equal distribution. In May, each household was permitted one cake of toilet soap and two of tar soap.

Lend-Lease Essential Oils

Purchases for lend-lease during the period January 1 to June 30 amounted to: grapefruit oil 1,975 pounds, lemon oil 89,280 pounds, peppermint oil 50,000 pounds, sassafras oil 500 pounds, wormseed oil 500 pounds, miscellaneous essential oils 44,975 pounds—as well as 2,000 pounds of U.S.P. peppermint oil to a number of claimant agencies. During the same period of time purchases of essential oils for lend-lease, territorial emergency, Red Cross, and others, amounted to: grapefruit oil 7,650 pounds, and of orange oil 23,515 pounds.

British Honduras Perfumes

British Honduras imported $19,202 in perfumes and toilet preparations in 1942. Of this amount, the U. S. supplied merchandise to the value of $13,877, the United Kingdom $2,884, and Jamaica $2,441. The trade was mostly in inexpensive products.

Belgian Congo Soap Embargo

It has been reported that since the Belgian Congo is now considered to be self-sufficient in the production of ordinary soap it will no longer be permitted to import the product. Toilet soap and soap powder may still be imported, however.

Alcohol Production in Eire

Distillation of alcohol from potatoes has been resumed at the Labbydish plant, Eire. Surplus potatoes are available to supply the factory for a limited time, it is stated.

New Brazilian Wax

A new wax, similar to carnauba wax, is being harvested in the Para highlands of Brazil. This wax is found on the underside of the leaves of the caussu plant, and is harvested by hand.

Commercial production after the war will depend upon refinements in extracting the wax from the leaves.

Sugarcane Wax

The extraction of sugarcane wax in the Union of South Africa is now in the experimental stage, under the auspices of the Department of Commerce and Industries. The work is scheduled to continue for some months before results are announced. Commercial production of sugarcane wax in Australia is now underway.

Short Adages

by R. O'MATTICK

PARIS, *mes enfants*, is once more in the hands of the French! We rejoice! Paris—the City of Light—was not only the brightest jewel in pre-war Europe—the world's center of art and fashion and gaiety—it was the heart and soul of the world of *perfumes*. It is not out of place, we think, to recall in this column the charm and glory of the Paris that was, and that, we hope, will soon be again.

When no thought or talk of war clouded the sky, we were revisiting France to renew old acquaintances and to break bread with the merchants and distillers of absolutes, the compounders of concentrated essences, and the designers of beautiful perfume bottles. There was no need to go to Grasse again—everyone and everything seemed to be in Paris. We even remember the name of the establishment—a little eating place—not far from the Rue Soufflot and the Pantheon where the buyers and sellers of perfume oils and absolutes gathered.

How they first came to select La Petite Colonne no one knew. It was not near the offices of the famous perfume houses—the proprietor of this rendezvous had no connection with jonquil or jasmin—he knew nothing about extracts and pomades, and cared less. His interests in life centered on a fine cuisine, fine wines and a most remarkable collection of starfish. The perfume oil men would sit at La Petite Colonne—which took on the nickname of Petite Cologne—for hours on end, sipping aperitives, eating, laughing, joking and boasting. The proprietor, with gendarme mustaches and a twinkle in his eye, was always on hand to welcome Messieurs les Directeurs. To him everyone was Monsieur le Directeur. We were relieved to discover that our difficulty in understanding much of the French spoken there was not toujours our fault. The number of French parfumeurs who came from Moscow and Vienna was amazing. And thrown in, to boot, were the Otto of Rose distillers from Bulgaria who gathered there.

"It's not exactly a night cream, madam; it's more for late in the afternoon!"

They seemed to spend one week a year in the Balkans producing Rose Oil, five in the United States selling it, and the remaining forty-six weeks enjoying life, writing post cards to their customers in New York and London, walking along the Boulevards in summer, and going to the Opera in winter. What a wonderful lot they were. Each had the best roses, of the reddest color; the largest plantations, the most modern stills, yielding the purest otto with the finest bouquet. Each had the biggest customers and, bien attendu, the very lowest prices.

This collection of Muscovites, Viennese and Bulgarians, with a few Frenchmen thrown in, would talk from night to morn at La Petite Colonne, near Rue Soufflot, while the giants of French literature slept peacefully in the solemn quiet of the Pantheon nearby. If only a Hugo could return to his work for a week, what a novel he would weave around les amis de La Petite Colonne!

Paris had a way as no other city ever had, of taking everyone from the four corners of the earth to its warm heart. There were no foreigners—only sojourners in other lands, who finally came to that enchanted city where they should have been in the first place. Not only was this true of perfumers. Who were the modern French painters in those wonderful days? Beaudin was French but so was Chirico who came from Greece and a dozen others from places thousands of miles from La Petite Colonne.

Yes, mes enfants, Paris is free and in the hands of the French once more. Where is La Petite Colonne and its proprietor and the others? They are no more. Yet they will live again because Paris will live again and some day will laugh again.

Sugar Industry in the British West Indies

The sugar industry in the British West Indies was given a shot in the arm during the quarter ending June 30, by the passage of an ordinance by the Legislative Council. This ordinance, which was intended to help the sugar industry to recover from the set-back it has suffered during the past two years, permits the expenditure of $1,200,000. However, up to the end of the quarter no commitments had been made involving this fund.

In addition, the Imperial Government has continued the subsidy of $40 per acre payable on sugar cane cultivation for the remainder of the year. This enables the sugar growers to pay higher wages.

While the export of sugar during the first five months of the year was down, exports of cocoa showed an increase over the corresponding period of the previous year. Measures, applied to sugar, have been considered for the cocoa industry.

Technical Abstracts from Scientific Literature

These brief abstracts listed provide a convenient key to current scientific literature of the world on perfumes, cosmetics, toilet preparations, soaps and dentifrices

Stability of Sulfonated Oils. *Soap and San. Chem.* **19**, *65, 1943.* Sulfonated oils such as sulfonated castor oil and olive oil may be tested for stability by boiling a small portion in water for a few minutes and allowing to cool gradually. Any tendency toward the formation of oil globules or scum will denote poor stability and inferior quality. Danger of oxidation and subsequent rancidity may be forestalled by exposing a strip of cloth saturated with a normal solution of the product to intermittent atmospheric oxidation for a few minutes at a time, at a temperature of 120°F, over a period of two weeks. Yellowing and malodor indicates unsuitability of the product for commercial purposes; such oils will give rise to staining, yellowing and objectionable odors on storage of goods which have been treated with them, and should be rejected for such purposes.

Detergent Composition. U. S. 2,316,194. A shampoo comprises alkali metal fat acid sulfoacetate (1) sodium citrate, sodium tartrate, sodium malate, and for each part of I, 1.5 to 5 parts of 2-ethyl-hexyl-sulfoacetate. (Through *Oil and Soap*, **20**, *No. 6, 124, 1943.*)

Container Lining Wax. U. S. 2,306,576. The principle is discussed of preventing loss of aroma constituents from a liquid in a wax-lined container by incorporated suitable aromatic and flavoring constituents in the lining wax. It is stated that waxes generally have a pronounced tendency to weaken or destroy the flavor of beverages such as beer, due to an affinity of the wax for the flavoring constituents, either through absorbency of the wax or some chemical reaction which takes place during pasteurization or storage. In the case of beer, treating the wax with hops will prevent loss of the characteristic flavor in the beverage. The entire batch of wax may be treated with hops to produce the desired degree of aroma, or a small quantity of highly flavored wax may be added to the main batch while molten to achieve the desired result.

The two claims of the patent cover a wax-lined container for beer or other food products, having a non-brittle, firmly adhering lining with melting point above the pasteurizing temperature, the lining containing up to 2 per cent of a 221- to 226°F. melting point amorphous wax with an ester value of 110 to 125 and an acid value of 10 to 15. (Through *Food Ind.* **15**, *No. 7, 143, 1943.*)

Dangers in the Perfuming of Soaps and Their Elimination. A. Foulon. *Fette u. Seifen*, **48**, *148 (1941).* Perfumes added to soaps are decomposed by free alkali, fatty acids and unsaponified fats. This is avoided by addition of zinc oxide (I). I makes it unnecessary to have some free alkali in soaps. The chemical action of I is the formation of zinc soaps of the lower fatty acids. These soaps are harmless and emulsify well. The physical action of I depends upon its fine particle size and surface activity. Impurities are absorbed in the surface as are the added perfumes and the acids of low molecular weight. I converts the colored oxidation products of perfumes, e.g., acids from aldehydes, to colorless salts. (Through *C. A.*)

Process for Producing Synthetic Esters. U. S. 2,307,794. The process for esterification of a higher fatty acid and a polyhydric alcohol includes maintaining a mixture of said acid and alcohol in liquid phase at a temperature above that of boiling water and agitating the mixture by the use of superheated steam. (Through *Oil and Soap* **20**, *No. 5, 98, 1943.*)

Antioxidants for Fruit Oils. U. S. 2,215,858. Stabilization of the flavor and color of fruit juices, flavoring materials, essential oils, extracts, etc., by use of an oxidation inhibitor, which may be hydroquinone, toluhydroquinone, catechol or resorcylaldehyde, is covered in a patent recently issued. An example of the use of these materials is the addition of hydroquinone to fresh oil of lemon, orange or lime in the proportion of 0.01 to 0.6 per cent by weight. Another suggested use is in a flavoring material for gelatine desserts prepared by dissolving gelatine in water and adding ethyl succinate, hydroquinone and flavoring oil, using 0.03 gm hydroquinone for 21 gm of orange oil, 0.019 gm for 16 gm of lemon oil or 0.012 gm for 10 gm of lime oil. This mixture is dried and ground for use in flavoring the dessert, which is claimed to have keeping qualities which have been demonstrated to be more than adequate for the purpose. (Through *Food Ind.* **15**, *No. 7, 144, 1943.*)

Perfumes—Solid. U. S. pat. 2,300,769. A perfume stick or the like is formed of a carrier of wax-like consistency such as stearyl and cetyl alcohols, impregnated with a perfume concentrate, the carrier consisting predominately of a normally solid alcohol. (Through *J. A. Ph. A.* **33**, *39, 1944.*)

Preparation of Mixed Esters of Polyhydric Alcohols. U. S. 2,309,949. A method of rearranging the fatty acid radicals in a mixture of substantially completely esterified fatty acid esters of polyhydric alcohols comprises maintaining the mixture at temperature of about 200 to 275° in the presence of about .05 to 1% by weight of an alkali metal soap and about .05 to 2% by weight of glycerol. (Through *Oil & Soap* **20**, *No. 5, 98, 1943.*)

Alkaline Detergent. U.S. 2,303,397. An alkaline detergent composition for soft metal comprises by weight about 95% sodium metasilicate and about 5% of a water soluble salt of a metal of the group consisting of barium and strontium. (Through *Oil and Soap* **20**, *No. 5, 100, 1943.*)

Personal Cleaning Composition. U. S. 2,303,932. A personal cleaning composition consists of non-irritating acid imparting material and the sulphonated ether product of the reaction of alkylated monohydric phenol with a polyether derivative of a material chosen from the group consisting of ethylene oxide, ethylene glycol and propylene glycol, said composition when worked with water, yielding a solution having a pH below 7 and above approximately 4 which is not irritating to the skin. (Through *Oil and Soap* **20**, *No. 5, 100, 1943.*)

Chocolate Plasticizer. L. A. Voroshilova and N. S. Pisarev, *Trudy Vsesoyuznogo Nauchno-Issledovatel'skogo Instituta Konditerskoi Promyshlennosti*, 1941, No. 4, 78-105, through *C. A.* **37**, *5798*, 1943.

A Russian investigator recommends addition of 0.1 per cent of triethanolamine to chocolate preparations. Small additions of this material lower the viscosity of a chocolate preparation, reaching minimum viscosity at 89.6°F. with 0.1 per cent added. Increasing the amount of added material to between 0.3 and 0.5 per cent increases the viscosity. Lecithin has more effect in lowering the viscosity of the chocolate. Both raise the viscosity of cocoa butter, triethanolamine more than lecithin. Addition of 0.1 per cent of triethanolamine kept chocolate in good condition in storage at 46.4 to 60.4°F. and 50 to 65 per cent humidity for 3 months. Lecithin and triethanolamine stearate did not.

Emulsions Such as Those of Oleaginous and Aqueous Materials for Cosmetic Purposes. U. S. 2,234,709. An emulsion such as a cosmetic cream is formed, having a normally acid reaction and containing oleaginous material together with aqueous material and an aliphatic polyhydroxy substance incompletely esterified with a fatty acid of high molecular weight, such an monostearin, and a cation-active hydrochloride of a fatty acid ester of a hydroxy-alkyl primary amine of higher molecular weight, such as a hydrochloride of the lauric acid ester of monoethanolamine. Numerous examples are given. (Through *C. A.* **38**, *2796, 1944.*)

Sunburn Preventives. U. S. 2,334,348. A composition to be applied to the human skin and hair, as a coating, for the purpose of rendering their outer surfaces, after removal of the coating, opaque to ultraviolet light, is formed of a nontoxic carrier having dispersed in it a colorless, fluorescent, basic compound, substantive to human skin and hair, which may be: 9-ethyl-3-dimethylaminocarbazole; 4-methyl-7-diethylaminocoumarin; 3-methyl-5-dimethylaminoazimidobenzene; 2-(paminophenyl)-5-aminobenzimidazole; 2-phenyl-5-aminobenzoxazole; 2-(paminophenyl)-6-methylbenzothiazole; or 3-dimethylaminoacridine. (Through *C. A.* **38**, *2796, 1944.*)

Relative Sweetness of Sucrose, Glucose and Fructose. A. T. Cameron. *Trans. Roy. Soc. Can.* **37**, *Sect. V.*, 11-27 (1943). By organoleptic experiment it is shown that the relative sweetness of these sugars varies with the concentration and that the sweetness of one sugar is enhanced by the presence of a second sugar. Evidence is given that a-d-glucose is sweeter than the B-form. A review of the literature and detailed analysis of the results are given. (Through *C. A.* **38**, *2669, 1944.*)

Calcium Pantothenate for Human Achromotrichia: Lack of Value on Prolonged Administration. Irvin Kerlan and R. P. Herwick. J. Am. Med. Assoc. **123**, 391, Oct., 1943. Calcium pantothenate has been offered to the public as an effective agent for restoring color to gray hair. Twenty milligrams of calcium pantothenate was administered daily for six months to 27 white men and women with graying hair. Close observation of the hair of these persons revealed no significant change. Controlled clinical evidence fails to substantiate the claim that pantothenic acid will restore color to hair in human beings. (Through *Arch. Derm. & Syphilology* **49**, *139-40, 1944.*)

Some New Fluorescence Reactions. J. A. Radley. *Analyst* **69**, *15-16 (1944)*. A 0.001% solution of acenaphthene-5-carboxylic acid in concentrated sulfuric acid gives a strong greenish yellow fluorescence in ultraviolet light when heated gently with formaldehyde. Similar fluorescence but of different colors is obtained with tartaric acid, carbitol, glycerol and ethylene glycol. Likewise fluorescence tests can be obtained with formaldehyde, citric acid, gum Senegal, gum arabic, gum tragacanth, gum ghatti, Manucol V and carbitol by treating 0.4 ml of solution with a crystal of Ammonium Persulfate, 2 drops of 7.5 N sulfuric acid and, after boiling 5 minutes, adding 1 ml of the acenaphthene-5-carboxylic acid reagent. These tests are useful for confirmatory purposes. (Through *C. A.* **38**, *1443, 1944.*)

Insecticides Suitable for Combating House Flies and Other Insects. Edward R. McGovran (to the People of the United States for free use), U. S. 2,332,097, Oct. 19. Pyrethrum extract is used together with compounds such as methylphenylnitrosamine or 2, 4-diamylcyclohexanol (suitably in a petroleum oil base for sprays or for preparing insecticidal dusts). (Through *C. A.* **38**, *1592, 1944.*)

Studies in Sensitization to Skin: I. The Production of Antibodies to Skin by Means of the Synergistic Action of Homologous Skin Antigen and Staphylococcus Toxin. Rudolph Hecht, Marion B. Sulzberger and Harry Weil, *J. Exper. Med.* **78**, 59, July, 1943. Hecht and his associates point out that there has been increasing attention to autosensitization, which is of interest to dermatologists because of the behavior of certain eczematous eruptions and because of Koebner's phenomenon.

Autolysates of rabbits' skin (skin antigens) were prepared for intramuscular injection and for precipitin tests. When homologous skin alone was injected into rabbits, the antibody formation was questionable, or, at most, slight, but when staphylococcus toxin was also given the synergistic action resulted in demonstrable specific antiskin antibodies. (Through *Arch. Dem. & Syphilology* **49**, *200, 1944.*)

The Use of Some Unsaturated Compounds to Induce Abscission

by NOEMI G. ARRILLAGA and MERRIAM A. JONES

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VARIOUS investigators have shown that unsaturated compounds such as ethylene have a definite effect on the abscission of plant organs. If a suitable chemical treatment, which would not injure the plant, could be devised, it would provide a method of harvesting plant parts from which essential oils or other compounds are to be extracted.

In order to test some chemical treatments for this purpose under controlled conditions, 5 freshly-cut branches of ilang-ilang, *Canangium odoratum*, Baill., were wetted and exposed under bell jars to concentrations of 1:10,000 of ethylene, acetylene, and carbon monoxide. After twenty-four hours' exposure, it was found that ethylene induced the fall of ripe petals leaving the ovaries attached; acetylene appeared to cause some ripening but no fall; the carbon monoxide treatment resulted only in a darkening of the flowers, while in the controls only a few leaves fell. In the same length of time, ethylene at 1:1,000 in a fumigation box produced the same effect as ethylene at 1:10,000 under a bell jar.

The fact that ethylene caused abscission of only ripe petals without the ovaries is important because ripe petals yield a superior oil, uncontaminated by the poorer quality oils of immature petals and of the ovaries. Since only the desired portion of the flower abscised, the concentration used was prôbably close to the optimum.

Distillation of 500 grams of abscised ilang-ilang flowers yielded 13.2 grams of an excellent oil of specific gravity of .9500 at 15°/15°, refractive index 1.5008, and ester number 83.

A test of saturated solutions of ethylene in water, with and without sodium alginate as a spreader, sprayed on ilang-ilang trees in the field failed to show any effect. Apparently, the gas was dispersed too rapidly to come into contact with the plant material to any significant extent. Some method of enclosing the trees to decrease free circulation of air would probably be needed before results could be obtained in the open.

Chinabox jasmin orange, *Murraya exotica*, L., branches treated under bell jars with ethylene gas at 1:10,000 dropped all flowers and many leaves. About three-fourths of the flowers in the control treatment also abscised. Apparently a very small concentration of ethylene gas is necessary to induce flower abscission of this plant.

SUMMARY

1. Ethylene induced abscission of the flowers of ilang-ilang and Chinabox jasmin orange. 2. Acetylene and carbon monoxide failed to induce abscission of ilang-ilang flowers.

Paper Industry in Brazil

Despite the war, which has cut off some of Brazil's sources of raw materials, an increase has been effected of some 170 per cent in the past five years in paper production.

Most of this has been made possible through the utilization of pine, fibrous plants, cotton linters, and rice straw. It is understood that a new enterprise is being started to make paper from the residue of jute.

New paper companies have been started and, due to the difficulty of obtaining machinery from abroad, much of the equipment is of domestic manufacture.

The largest chemical pulp and newsprint mill in South America has been under construction for the past three years at Tibagy, in the State of Parana. The war has caused repeated delays in the completion of this mill. However, the plant is sufficiently advanced so that if completion must await the ending of the war, it will be able to start operation almost immediately upon the declaration of peace. It is planned to produce 40,000 tons of newsprint, 40,000 tons of chemical wood pulp, and 45,000 tons of mechanical pulp annually, which is expected to satisfy a large portion of Brazil's requirements.

Tanganyika Paper Salvage

The railways of Tanganyika have offered to carry, without charge, waste paper collected through depots open throughout the country, as their contribution to the war effort. The paper collected will be converted into building material.

Lime-Oil Research, B.W.I.

Because of current conditions, the demand for lime juice as a source of citric acid has almost disappeared. As a result, cultivation of limes in the British West Indies has been curtailed.

At the present time the chief products of limes are expressed and distilled oil and juice. A study is under way, it is reported, to develop new products and compounds, which may be utilized as raw materials in the chemical industry, or for other manufactured products.

Toilet Goods from Brazil

The toilet goods and perfume industry in Brazil has progressed to the point where some exports were being made in 1943. However, some imports were still under way, principally from the United States and Great Britain, and to a lesser extent from Argentina and Uruguay. Before the war, France supplied most of the perfumes, and the United States furnished creams, lipsticks, lotions and tonics.

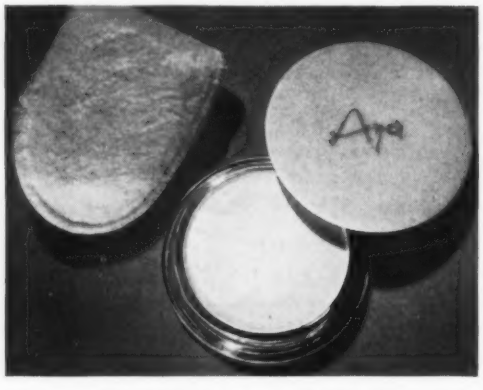
Advertising Pays

A recent survey conducted by the Worcester *Telegram* showed that four out of five women shoppers preferred buying nationally advertised products over unadvertised brands.

Of the women questioned in Worcester and contiguous towns, 51.4 per cent said they preferred buying cosmetics in department stores, while 30.7 per cent made these purchases in drug stores. House-to-house salesmen accounted for 3.9 per cent of the drug business in this territory.

Packaging Portfolio

HARRIET HUBBARD AYER



HARRIET HUBBARD AYER: Ayeristocrat, a new sponge-on make-up, comes in a glass case with a dainty pink plastic top. The finger-tip glove was especially designed to ease the application of this preparation which leaves a luminous veil over tiny blemishes and freckles.

JEURELLE

JEURELLE: Flowered Bath Trio, consisting of a bottle of cologne and two companion items, bath foam and body sachet, is a grooming ensemble presented for the holiday trade. The containers have an all-over flower motif of blue, magenta and parfait pink against a pale pink background.

MILKMAID

MILKMAID: Opal Cologne and Dusting Powder are shown in their new and attractive gift package. An all-over floral decor on white, the Dusting Powder comes in a new telescope type box; Opal Cologne in white, flower-strewn bottle, set off with a blue bow.

ODO-RO-NO: Odo-ro-no Cream is now available in an air-tight jar, ensuring its lasting qualities. A streamlined, pre-war design, the container is a glass jar with a threaded metal cap which ensures air-tight closure.

HEWITT: Shower Bar, a bath and hand soap, so shaped to fit the palm, is shown in its newly-designed package. Each box contains four fragrant bars—pine, sandalwood, bouquet and almond.

GOURIELLI

GOURIELLI: "At Your Service" gift set for servicemen is handsomely packaged in a grey box with the Gourielli crest in white. It contains Active Ozone Shave-Stick; Mouth Mist, tangy mouth wash and emergency tooth cleanser; and Active Ozone Foot-Stick, to cool, soothe and relax hot, tired feet.

RICHARD HUDNUT

RICHARD HUDNUT: Delicately and femininely executed is the Yanky Clover new design in packaging. Actual country scenes are portrayed in the familiar Yanky Clover color combination of fuschia and yellow. The distinctive pattern is carried throughout—from the individual cake sachets to the large gift boxes.

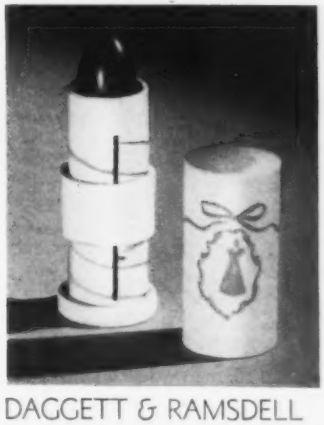
ODO-RO-NO

ESSENCE IMPERIALE RUSSE: A combinatoin of cologne and perfume; the scent which was created for Catherine the Great of Russia, is now shown beautifully gift-boxed for the holiday season. Essence comes in three ounce and six ounce bottles.

DAGGETT & RAMSDELL: Vibrant and sophisticated is the deep, new shade of lipstick by Daggett & Ramsdell. Longlasting, this creamy lipstick adds a dashing color accent.

HEWITT

IMPERIALE RUSSE



DAGGETT & RAMSDELL

War Check List—Government Regulations

Digest of Federal rules and regulations on price control, allocations and other regulatory measures of cosmetic soap and flavoring industries issued or proposed during the past month

Limitations Suspended on Some Oils

WFO 37 and 53, which have limited the use of processing and delivery of sperm oil, animal and distilled red oils, have been suspended until December 1.

Sperm oil may be used for any purpose, but users of over 500 pounds per month are required to report to the Bureau of Census. Producers and distributors of the other oils must report monthly to WFA.

Dentrifices Rate AA-3

Preference Order P-146 has been amended by the War Production Board so as to permit preferential rating in the purchase of fibre shipping containers to dentifrices, which are now rated AA-3. Cosmetics and toiletries are rated AA-5, facial tissues AA-3, soap AA-3.

Soap and Fatty Acid Inventories

War Food Orders 86 and 87 which have limited the soap and fatty acid inventories of industrial users have been terminated.

New Fibre Shipping Containers

On August 4 Limitations Order L-317 regulating new fibre shipping containers was amended as follows:

The total containerboard content of new fibre shipping containers accepted or used by any user for packing any Schedule III product shall exceed neither his footage quota nor his tonnage quota, during any three-month period. These restrictions do not apply to empty containers used by the Army or Navy, or to containers which are quota exempt under paragraph t in this amendment.

Quotas are not interchangeable as between separately listed items. But, where several products are included within the same item the user may distribute his quota for that item among those products as he chooses. In computing his quota for any Schedule III item the user must not include in his base the containerboard used during the base period for packing any Schedule II product which is included in the item.

Other amendments relate to quota bases, footage quotas, tonnage quotas, minimum pack allowance, adjustment for "reshippers" and inventory restrictions.

Code	Product	Quota Percentage
(*)	Beverages: non-alcoholic, as defined in Schedule VI of Order L-103-b	70
	Chewing gum	80
CONT-640	Closures; metal, and crowns; metal for glass containers	85
	Beverages: wine	70
CONT-623	Crowns, metal: beverage	85
(*)	Dentrifices	70
	Beverage compounds, concentrates and syrups, including, but not limited to, drink powders and soft drink concentrates	80
	Coffee, tea and spices (1941)	85
	Confectionery	80
	Dessert products	65
	Dried fruits	100
	Fillings, pie and cake	65
	Flavorings	65
	Food coloring	65
	Marshmallow and marshmallow cream	65
	Mustard	80
	Puddings	65
	Sugar	80
	Hair tonics, shampoos and hair dressing preparations	60
	Toiletries and cosmetics, including but not limited to perfume, make-up, lotions, skin food, hair remover-manicuring preparations, astringents, de-odorants, hair bleach and dye, face and body powder, except products otherwise listed in Schedules II and III	60
	Shaving cream and soap	70
	Soap, except industrial and shaving	80

Note: Asterisk indicates products not covered by code number.

Pine Tar Exemption

General Allocation Order M-300, Schedule 14, has been amended to increase small order exemptions from 5 gallons per month per person to 54 gallons.

Used Steel Drums

Dollars and cents ceilings have been established on used steel drums of 29 to 58-gallon capacity through MPR 353. Used and reconditioned containers of 7 gallons and up capacity have also been priced.

Soap Stock

Ceilings have been established on boiled down soap stock made from vegetable oil foots, both domestic and imported, through GMPR, Rev. Supp. Reg. 14.

Critical Occupations List Revoked

General Order No. 10 (governing critical occupations) has been revoked by the War Manpower Commission, effective August 4.

Glycerol Order Amended

General Allocation Order M-300, Schedule 15, has been amended to remove glycerols, diethylene glycol and propylene glycol. The order does not apply when these compounds are mixed with other glycols.

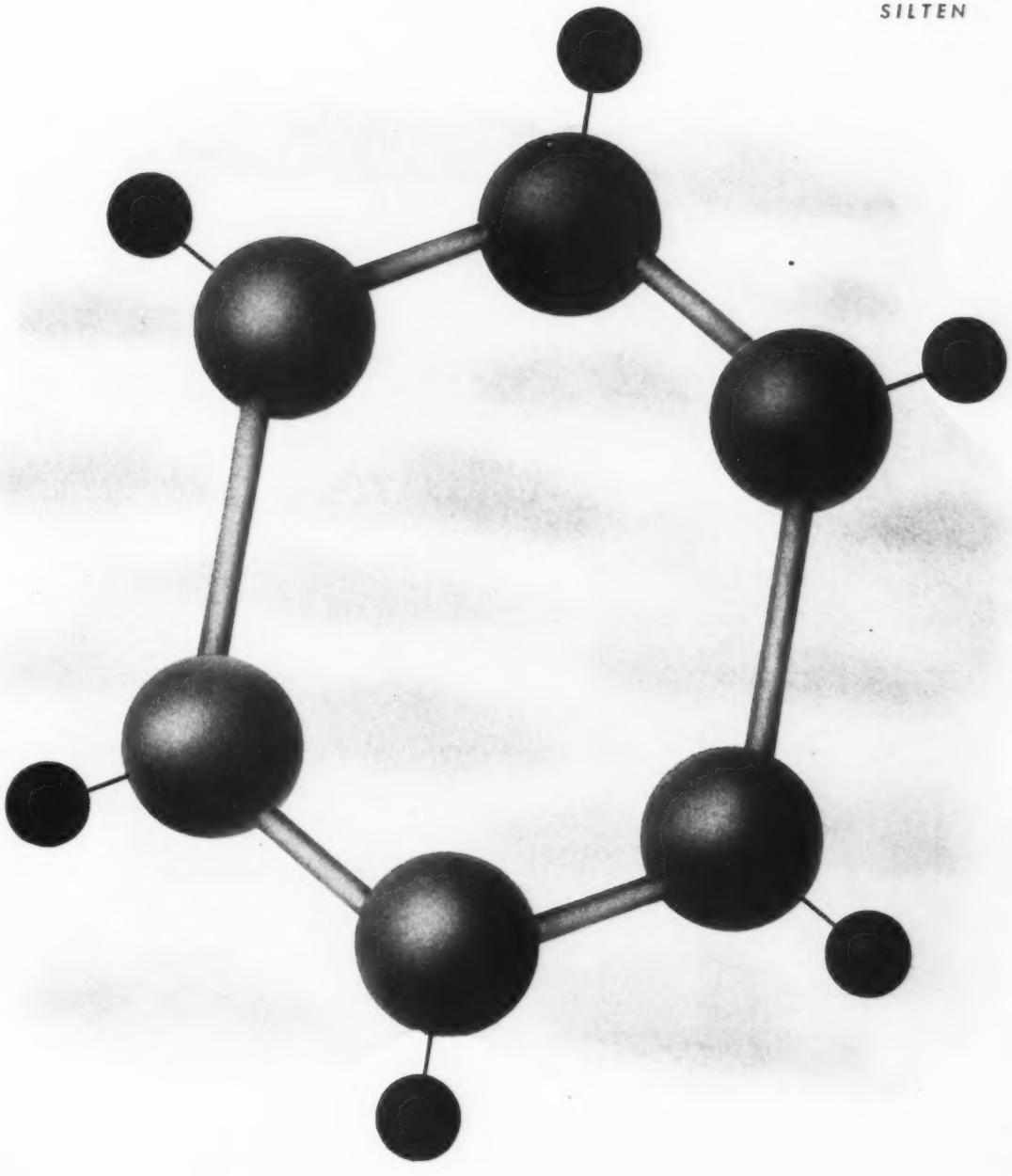
Synthetic Soap Allocation

The War Production Board has placed synthetic organic soaps under allocation to assure more equitable distribution to industry. This control is effected by adding Schedule 44 to Order M-300, the general chemicals order.

Only supplies for the military services are under this allocation order, and industry will continue to receive allotments in accordance with established preference rating procedures now in effect. The military branches will thus be assured of adequate supplies without resorting to the building of stockpiles.

There is no hope for early availability of these soaps for such peacetime uses as bubble bath soaps, domestic soap flakes, auto washing compounds and rug cleaners.

SILTEN



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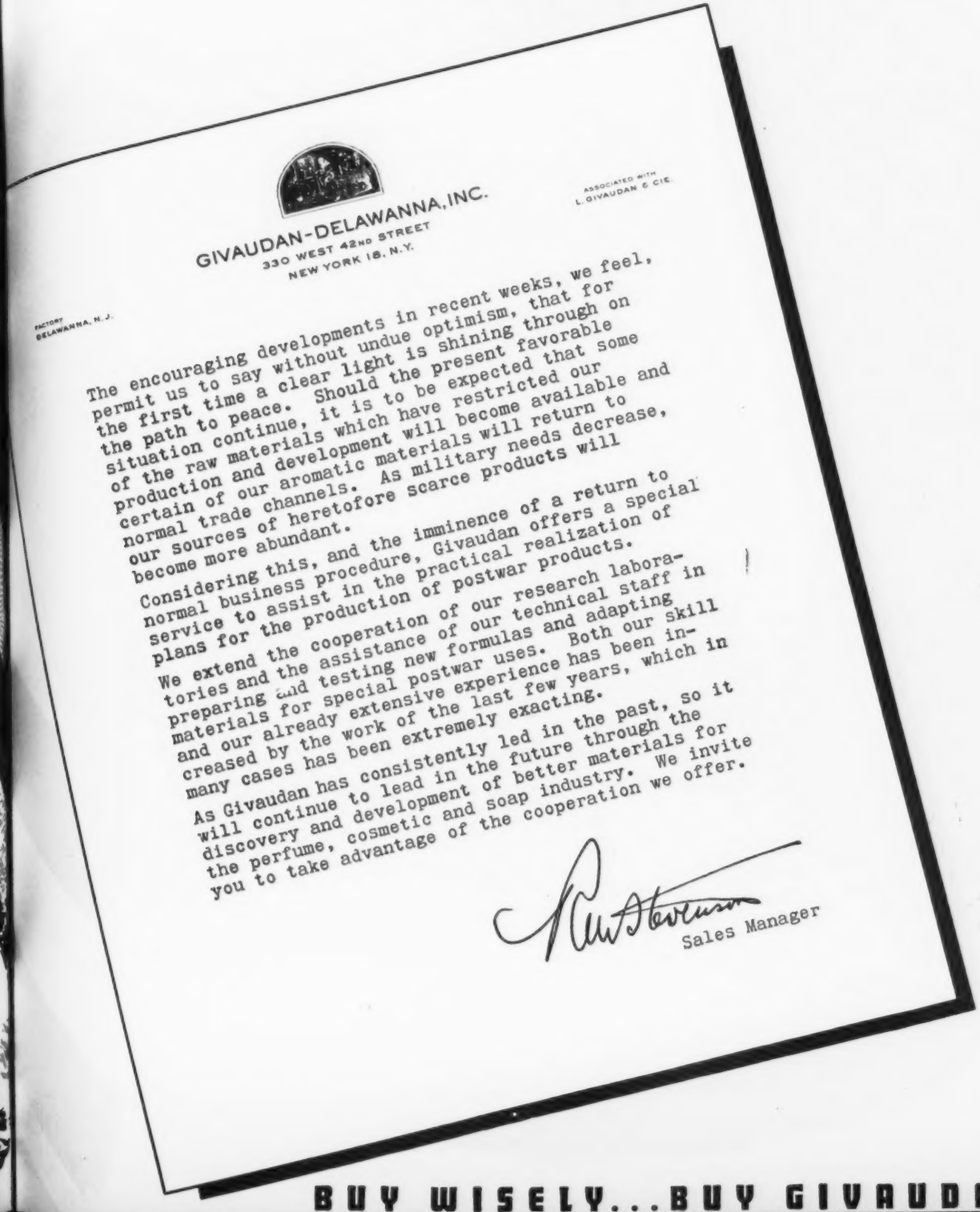
Letter TO THE PERFUME, COSMETIC AND SOAP INDUSTRIES



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The encouraging developments in recent weeks, we feel, permit us to say without undue optimism, that for the first time a clear light is shining through on the path to peace. Should the present favorable situation continue, it is to be expected that some of the raw materials which have restricted our production and development will become available and certain of our aromatic materials will return to normal trade channels. As military needs decrease, our sources of heretofore scarce products will become more abundant.

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We extend the cooperation of our research laboratories and the assistance of our technical staff in preparing and testing new formulas and adapting materials for special postwar uses. Both our skill and our already extensive experience has been increased by the work of the last few years, which in many cases has been extremely exacting.

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Growing and Processing Vanilla

Careful cultivation essential for the production of a fine quality extract . . . Planting, shading, pollinating and harvesting are the four processes which play important roles

by EILEEN NEUMANN

Home Economist, Virginia Dare Extract Company

MODERN food processing and the shortages of some food materials make flavorings an important part of every day cookery. When we consider the small percentage of flavoring used and realize the extent of its influence we realize that these bottled extracts are magic.

MOST POPULAR FLAVOR

In a recent survey conducted by the Homemakers Guild of America the answer to the question "What flavor is most frequently used in your home?" was overwhelmingly for vanilla.

When Cortez conquered Montezuma he discovered the Aztecs using the vanilla bean to flavor their chocolate. The conquerors took this member of the orchid family back to their native Spain and started the flourishing industry that we know today. Later on some of the plants were taken to Madagascar and the foundations for the industry as we now know it were laid. In normal times about two-thirds of the 1,000,000 pounds of vanilla beans imported by the United States is obtained from Madagascar and the surrounding islands. The major portion of the remaining beans come from Mexico.

The political situation in Madagascar at the present time and the inability to obtain any appreciable shipping space from the area have prevented exportation of any considerable amounts of vanilla beans. This places a greater importance on the production and use of Mexican vanilla beans.

The vanilla plant grows well in a warm, humid climate. While many sections of Mexico have all of the satisfactory geographical conditions for the profitable growth of the vanilla plant, the major portion of the beans are grown on the lands of the Tolonaco Indians, and in the Papantla region of Vera Cruz.

There are four processes which play an important part in the production of this plant. They are planting, shading, pollinating and harvesting. The vines are planted in the late spring or early summer and it usually takes three years before the first flowers appear. During the period of growth shade must be regulated by the proper shearing and cutting of the surrounding growths.

HAND POLLINATION

The pollination of the flowers, usually by artificial means, is an important but tedious task. Each flower remains open for twenty-four hours and during that time the flower must be pollinated by hand. At that time in the growth of the plant everyone is called upon to help in the fields so that the crop will be as large as possible. The beans develop only from those flowers which have been pollinated.

It takes approximately forty days for the beans to grow to full length and several months more for the bean to mature and ripen. After the beans are ripe they are cut and cured.

CURING PROCESS

In the curing process the beans are allowed to dry and the oleoresins, which are responsible for much of the characteristic flavor, are formed. The beans are exposed to the sunlight for short periods of time and then packed, while they are still

warm, in sweat boxes. The process is repeated several times. The beans are sorted and graded according to the length of the bean, appearance, odor and the amount of moisture present.

If too much moisture is left in the beans they will mold and become a loss to the grower or the manufacturer since moldy beans cannot be used to make extracts. Because undue moisture and careless packing might result in the spoilage of the beans, great care is taken to pack the beans carefully. The operation, almost completely manual, consists of bundling the beans according to the length of the bean. They are then packaged with moisture-proof paper in tin containers.

The majority of the vanilla beans produced in Mexico is exported to the United States for use in vanilla extract. Careful cultivation of the beans produces a fine quality bean and careful, skillful handling of them will make a fine quality extract.

MANUFACTURING THE EXTRACT

The first step in the manufacture of the extract is a careful inspection of the beans to be sure that they are of high quality. Different types of beans and different crops of the same variety of beans will vary in vanilla and other flavoring content due to geographical conditions and curing processes. For that reason it becomes necessary to make test extracts of the beans to insure proper blending and a uniform extract.

The beans are chopped so that the greatest amount of surface will be exposed to the extracting substance. The beans are packed in a percolator and the extracting solution, usually consisting of glycerine, sugar and ethyl alcohol, is pumped over them. During the period of extraction careful control of the temperature is desirable so that the maximum amount of the flavoring substances are extracted. The beans are percolated for approximately one week with constant circulation of the extracting solution.

The still method requires about three weeks for the extraction. The beans are packed in baskets at the top of the percolator and the extracting solution circulates slowly over them. The movement of the solution is caused by intermittent heating. As the solution expands and contracts it moves over and around the beans.

After the period of extraction, the extract is aged so that the flavors will become mellow. Aging of the extract produces a smooth vanilla in which all of the flavorings have blended with the extracting solution and no single flavor predominates, and the mild characteristic flavor of pure vanilla develops to its fullest extent.

IMITATION VANILLA EXTRACT

Because of the limited production of pure vanilla extract due to shortages of vanilla beans and alcohol for extraction, increasing interest has been centered on good imitation and compound vanillas. Bear in mind that the word imitation does not necessarily infer that the product is inferior. Pure quality beans that have been improperly cured and extracted will not make a good pure vanilla. Careful preparation from a well balanced formula will produce an extract that, although called imitation, is a very satisfactory flavoring.

Imitation vanillas are usually made from vanillin, coumarin, tonka extract and other vanillin compounds as ethyl vanillin and dihydro vanillin, in some solvent as glycerine, propylene glycol, or alcohol. The characteristic color is supplied by caramel coloring.

Compound vanillas are made from pure vanillas with vanillin and coumarin added to round out the strength of the extract. The proportion of pure to imitation varies with the use to which the vanilla is to be put.

Vanillin, present in small quantities in the pure vanilla bean, is manufactured commercially from oil of cloves, a coal tar product, and from lignin. The first vanillin prepared commercially from oil of cloves sold for about $800.00 per pound. More efficient methods of manufacture and a greater demand for vanillin have brought the cost of this essential flavoring to about $3.00 per pound. Vanillin manufactured from oil of cloves is called clove vanillin. Eugenol is the aromatic principle of oil of cloves which is converted to isoeugenol and then oxidized to vanillin.

Vanillin prepared in any of the three methods mentioned may contain impurities so minute that they cannot be detected chemically but may influence the flavoring of the vanillin. Therefore, the last step in the manufacture is the recrystallization of vanillin from an alcohol and water solution to obtain not only a chemically pure product but a product which will pass rigid olfactory and organoleptical tests.

RECENT DEVELOPMENTS

The most recent development in the manufacture of vanillin is its production from lignin. The production of wood pulp from spruce and other cone bearing trees yields vanillin as a by-product from the waste liquor. The problem of purifying the vanillin thus obtained was one that required a great amount of research but when it was solved lignin vanillin began to be produced in large quantities.

Do you like the delicate odor of new mown hay? The fresh fragrance of a clover field? Both of these are due to the presence of coumarin which is prized for its flavor as well as its subtle odor.

Commercially coumarin is produced from a coal tar derivative and is a white or colorless crystal. It is stronger in flavoring strength than is vanillin and must be cautiously used to prevent over-flavoring.

Tonka extract is also used in imitation vanilla. The delicate flavor of coumarin combined with other natural flavors of the tonka bean lend a characteristic flavor to the extract. The tonka bean, indigenous to South America, is chopped and extracted in a manner similar to that used to extract vanillin from the vanilla bean.

Ecuadorean Cocoa Crop

The principal crop of cocoa in Ecuador has been harvested, and confirms earlier estimates that the 1943 production would be at about a 50 per cent decline from the one of the previous year. Prospects from the intermediate crop are good, but an unusually good yield would not make up for the deficiency in the main crop.

An unusual feature about the export market is found in the large shipments which were made to Guatemala during June. Guatemala is ordinarily a producer and this is the first shipment of Ecuadorean cocoa to that market in many years.

Bourbon Beans Lost at Sea

As a result of the sinking of a cargo ship laden with approximately 100 tons of Bourbon vanilla beans, which was officially confirmed by the U. S. Navy August 29, the vanilla bean industry has suffered a severe blow. As it was one of the largest shipments from Madagascar since the war started and the only one since last October with the exception of a small one which arrived some time ago, the disaster left a void in the market in the United States.

Temporarily this may have an effect on the price of Mexican vanilla beans, but it is expected that every effort will be made to expedite the shipment of more Bourbon vanilla beans from Madagascar and transhipment ports which will relieve the situation.

It is to be hoped that the War Shipping Administration will grant a sufficiently high shipping priority on future shipments to avoid any undue delay in the goods coming either directly from Madagascar or indirectly from any transhipment port.

Candy for Overseas

About 16,000,000 pounds of candy will be purchased by the Quartermaster Corps during 1944 for free issue to troops in combat or other areas where there are no post exchanges or other sources.

The candy for gratuitous issue will be composed entirely of the hard varieties of which approximately half will be peppermint-flavored and the remainder will be of assorted flavors including cherry, orange, clove, lemon and lime.

Candy for this purpose must be sugar-coated in order to prevent stickiness and it is shipped in metal-end, glassine-lined fiber containers which hold five pounds each. It is packed eight containers to the case for overseas shipment.

Candy is included in the list of comfort items authorized for gratuitous issue at the discretion of theater commanders under certain conditions. It is issued in the ratio of one ounce to each ration or a little less than a pound per man a week.

Beet Sugar Prospect

The United States Department of Agriculture has indicated that excessive weed growth, bad weather conditions and planting time, and poor stands will reduce the beet sugar crop to approximately 7,227,000 tons. While this estimate exceeds last year's crop of 6,522,000 tons, the present crop is far below the average of 10,094,000 tons.

The department further indicates that the prospective sugar cane production for 1944 is estimated at about about 6,166,000 tons compared with 6,510,000 tons last year.

Canadian Apple Syrup

A wine company at St. Catharines, Ontario, Canada, has begun the experimental production of apple syrup, with a sugar content of 60 per cent. The syrup may be used for cigarettes, cosmetics, and other commercial products.

In this way apple growers in Ontario may soon find a market for windfalls and other damaged apples, which are usually wasted. The Ontario Department of Agriculture estimates that 13 per cent of Ontario's 1943 apple crop was wasted.

Peppermint Oil Crop

Preliminary reports from the Bureau of Agricultural Economics indicate a 1944 production of 1,034,000 pounds of peppermint, and 211,000 pounds of spearmint oil. This would mean a gain in peppermint oil of about 208,000 pounds over the production of the previous year, and a drop of about 28,000 pounds of spearmint for the same period of time.

Crop prospects as of August 1 follow:

Peppermint Oil Acres Planted

	1944	1943
Indiana	17,000	15,900
Michigan	12,000	13,000
Ohio	160	120
California	1,250	690
Oregon	4,500	3,800
Washington	3,900	3,500

Oil Pounds

	1944	1943
Indiana	354,000	286,000
Michigan	288,000	234,000
Ohio	4,000	4,000
California	48,000	25,000
Oregon	184,000	133,000
Washington	156,000	144,000

Spearmint Oil

Acreage

	1944	1943
Indiana	5,800	5,800
Michigan	1,900	1,900
California	....	30

Oil Pounds

	1944	1943
Indiana	145,000	174,000
Michigan	6,600	63,000
California	....	2,000

Mint Oil Restrictions

It is reported that Brazil will not consider favorably further applications for the export of mint oil containing 75 to 80 per cent of menthol, and which lends itself to the easy extraction of menthol. Mint oil containing between 50 and 60 per cent of menthol may still be exported.

Rosin—Use in Salt Water Soap

Problem of washing in sea water . . . Besides containing as much moisture as possible soap to be used in sea water must contain protective agents which help to get soap into solution

by B. S. VAN ZILE and J. N. BORGLIN

Hercules Experiment Station, Hercules Powder Company, Wilmington, Delaware

THE problem of washing on shipboard at sea has probably existed since man built and sailed his first seagoing boat. In the days of sailing ships, it appears that cooking and eating utensils were washed by scrubbing with a mixture of sand and wood ashes. Soap for toilet, bath or laundry use seems to have had little demand. In latter years any available soap seems to have been used until someone hit upon the idea of a salt water soap made from coconut oil.

In this country considerable work has been done on coconut oil soap for this purpose until the product covered by Federal Specification PS611 containing about 3% of salt, 3% of soda ash, 39% coconut oil soap, and 55% water was developed. Few people, it seems, have tried to improve upon it. Pech (1, 2) patented a salt water soap composed of coconut oil 100 parts, caustic soda 4.75 parts, sodium silicate 5 parts, caustic potash 6 parts, and 100 parts of a 4% solution of potassium chlorate. The silicate probably helped the soap but whether or not the chlorate had any value is problematical. Brunet (3) suggested that for washing in sea water a soap containing much glycerol and alkali would remove "epithilial debris" and grease. Miyoke, Kimoshita and Tomeoka (4) prepared a salt water soap by boiling 2 parts of red algae in 50 parts of water and filtering. To the filtrate, mixed with 18-19 parts of caustic soda and 6-8 parts of soda ash, add 100 parts of palm oil while hot. Then add 1.5-2.5 parts of ammonium chloride and 5 parts of ammonium sulfate. So far as we could discover, nothing was said about how the extract of red algae and the ammonium salts improved the cold process palm oil soap.

PROBLEMS ENCOUNTERED

The problem of washing in sea water is, of course, that of getting sufficient soap into solution to do the job. In the presence of 20,000 p.p.m. of salt and 12,000 to 13,000 p.p.m. of calcium and magnesium salts, a film of insoluble soap is formed on the surface of an ordinary soap which retards solution to such an extent that the soap is considered insoluble. If the insoluble film is removed as fast as it forms by some kind of abrasion sufficient soap will be dissolved to react with the hardness and saturate the salt solution with soap. One of the physical chemists working in the field of detergents is of the opinion that the film of insoluble soap acts as a dialyzing membrane, holding back the salt and passing pure water. The pure water is thought to dissolve the soap and finally build up sufficient pressure to break the membrane, allowing the soap solution to disperse and react with the hardness. A new membrane forms around the soap and the dialysis process starts on another cycle. This process is repeated until sufficient soap is dissolved to react with the hardness, disperse the curd and have sufficient active soap in solution to do some washing. Moisture in the soap greatly accelerates the process, hence a salt water soap should carry all the moisture possible. In our experience the quickest way to make a solution of soap in sea water is to melt the soap in a

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Your job is to keep it constantly revitalized. See to it that not a single new or old employee is left unchecked. See to it that your Team Captains solicit everyone for regular week-in and week-out subscriptions. And raise all percentage figures wherever possible.

Don't underestimate the importance of this task. This marginal group represents a potential total sales increase of 25% to 30% on all Pay Roll Plans.

Constant vigilance, in a quiet way, is necessary to keep your Pay Roll Savings at an all-time high. Don't ease up—*until the War is won!*

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small amount of sea water and dilute the paste so formed.

Besides containing as much moisture as possible, a soap to be used in sea water must contain protective agents which help to get the soap into solution.

After the Japanese cut off our supply of coconut-type oils, the Navy issued an ad interim specification for Salt Water Detergent, Bar Form, 51D7 (INT) containing 50% soap, 20% synthetic detergent, and 30% neutral salts. The physical chemistry of the functioning of the mixture in sea water is a controversial subject in which the present authors have no desire to become entangled. We will content ourselves with a statement of some of the views that have been expressed and allow the reader to take his choice. Some workers in this field believe that in the presence of hardness, soap and synthetic detergent form a complex perhaps of the nature $Ca<\frac{\text{soap}}{\text{synthetic}}$. This complex not only acts as a precipitant for hardness, but having greater solubility than the calcium soaps, it aids in dispersing the insoluble curd. When the hardness has all been precipitated and dispersed, sufficient synthetic will be left to aid the soap in doing a wash job. Others feel that the soap alone precipitates the hardness and the synthetic does the washing. If such is the case the soap is wasted because the synthetic could be used alone and should do just as good a job without softening the water. Another school of thought is that the soap precipitates the hardness, the synthetic then disperses the insoluble soap and allows the excess soap to do the actual washing. Whatever the physical chemical mechanism, the fact remains that the combination of soap and synthetic works better than either one alone. Also the combination works at a relatively low concentration which seems to rule out any thought of the complete precipitation of the hardness.

MANY SYNTHETICS NOT SUITABLE

While soap and certain synthetic detergents work well in sea water it is unfortunate that many synthetics are not suitable for this use. Some are unsuitable because they are made from strategic materials, others because they are available in very limited quantities, hence are high in cost. Some others because the bar does not have the right physical properties, and lastly many do not meet the performance tests. As a consequence, when practically all of the suitable synthetics are taken for salt water soap the production is still far beneath the needs of the Armed Services. It was imperative, therefore, that soaps prepared without synthetics that would perform in sea water be produced. We, therefore, started a study of other soap builders or adjuncts which might produce a soap that functions in sea water at a concentration sufficiently low as to be usable both from a cost and performance angle.

USE OF ALKALINE SALTS

There are several alkaline salts which, when used in sufficient quantities, will protect soap in sea water and allow it to do a fairly good washing job. All of the polyphosphates (tripolyphosphate, tetraphosphate and hexametaphosphate) are very effective in such a composition. However, each appears to be ruled out either by cost, scarcity or acid reaction. Tetrasodium pyrophosphate does a very effective job, is low in cost and relatively easy to obtain. It also works well as a protective agent when used in conjunction with other alkaline salts such as the silicates. Unfortunately, the quantity of alkalies required is large compared to the amount of soap and makes the production of such a composition in bar form next to impossible. It seemed desirable, therefore, to add a noncrystalline protective agent which would allow the reduction of the quantity of alkaline salts necessary for the protection of the soap.

W. D. Pohle (5) has compared the solubility of the resinates of calcium and magnesium with that of the calcium and magnesium soaps and found that the resinates were much more soluble. In our work we had also found that an excess of a resinate of an alkali metal would solubilize calcium and magnesium resinates. This is especially true if there is sufficient free alkali to raise the pH to about 11.0. He also found (6) that the resinates had good detergent properties. Borglin, Mosher, Noble and Punshon (7) also found this to be the case. Since the resinates offered desirable protective and detersive properties and aid in producing a nice smooth bar of soap their use in conjunction with soap and alkalies was thoroughly investigated.

PERFORMANCE TEST

The performance test used was that outlined in the Navy's ad interim Specification 51D7 which is briefly as follows: Wool fabric is soiled by passing through a soiling solution a sufficient number of times to reduce the reflectance to 30% (±2.5%). The soiling solution is composed of

Edible tallow	2.0 g.
White mineral oil	6.0 g.
Lamp black (Grinder No. 2)	0.125 g.
Carbon tetrachloride	4.0 liters

After soiling, the wool fabric is washed by the following procedure: Dissolve the sample in 1000 ml. of artificial sea water, warming if necessary. Cool to room temperature. Take 250 ml. of this solution in an 8 in. evaporating dish and wash a 4 in. square piece of the soiled wool fabric by squeezing it vigorously 50 times in the detergent solution within two minutes. Rinse in warm soft water and dry. The reflectance is then compared with that of an unsoiled piece of the wool fabric which has been squeezed 50 times in artificial sea water, rinsed and dried.

The composition of the artificial sea water is

Magnesium chloride ($MgCl_2 6H_2O$)	11.0 g.
Calcium chloride ($CaCl_2 2H_2O$)	1.6 g.
Sodium sulfate (Na_2SO_4)	4.0 g.
Sodium chloride (NaCl)	25.0 g.
Water to make	1.0 liter

The concentration of detergent used in this test was varied until a solution was obtained which would remove all of the visible black from the wool fabric. The lowest concentration which would accomplish this was considered the optimum for that detergent. Coconut oil salt water soap (PS611) required 7% of dry solids or over 15% on the 55% moisture basis. The addition of alkaline builders reduces the necessary concentration. Mixtures of 50 parts of soap with 50 parts of trisodium phosphate, metasilicate, N silicate or soda ash required about 6%, while a 50-50 mixture of soap and tetrasodium pyrophosphate required only 4.75%.

For use in salt water sodium resinate alone aids soap very little, but in combination with alkalies it is very effective. For instance, it re-

SORBOTEX 301

. . . a new development in

ABSORPTION BASE

WHAT IT IS

SORBOTEX 301 is a white, ointment-like, odorless mixture of higher fatty alcohols and esters in a hydrocarbon base. It does not contain lanolin. It is free from any tendency to eventually discolor the products in which it is used or to impart an undesirable odor to them. Its water absorption is substantially greater than that of absorption base containing either lanolin or lanolin isolates.

WHAT IT DOES

SORBOTEX 301 makes white, stable water-in-oil emulsions. In the presence of an alkali, it is also a highly effective emulsifier and stabilizing agent for oil-in-water emulsions, an advantage offered by very few types of absorption base.

USES

SORBOTEX 301 is applicable to night creams, cold cream, ointment bases, permanent wave preparations, etc. It can also be used as an extender for lanolin.

Suggested percentages: In water-in-oil emulsions, that is, creams having a high fat-content, such as night creams, for instance, up to 25 percent. In oil-in-water emulsions, that is, creams with a low oil-content, such as vanishing-type face and hand creams, up to 5 percent. In permanent wave preparations, up to 2 percent.

MAKE THIS TEST

Make a small batch of one of your creams, replacing the absorption base that you are now using with Sorbotex 301. Compare the cream containing Sorbotex 301 with that made with your present absorption base, as to appearance, texture, emollient effect, and stability. We will gladly supply the Sorbotex 301 required to make the test, without charge.

SORBOTEX 301 is made of freely available raw material; it can therefore be supplied promptly in all quantities. Its price is attractive.

VAN DYK & COMPANY
INCORPORATED 1904
MANUFACTURERS OF PERFUMERY AND COSMETIC RAW MATERIAL SINCE 1901
OFFICES, LABORATORIES & FACTORY: MAIN & WILLIAM STREETS, BELLEVILLE 9, N.J.
LOS ANGELES: 1282 SUNSET BOULEVARD

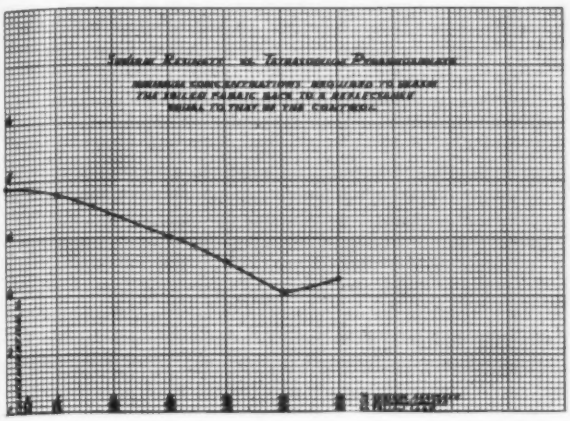

Figure I

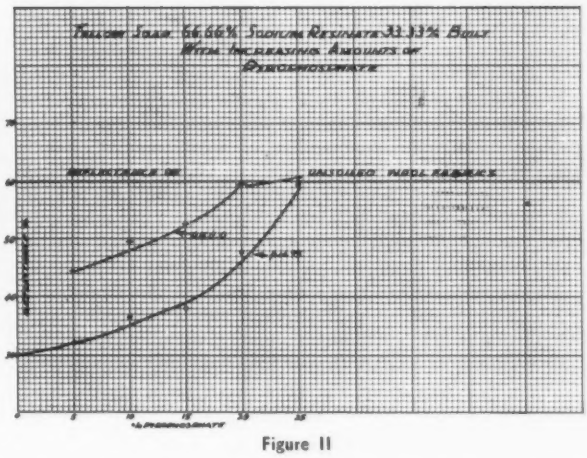

Figure II

quires only 3% of a mixture of 50% tallow soap, 25% resinate and 25% pyrophosphate to meet the above test. The soap containing synthetic detergent as specified in 51D7 requires between 2.0 and 2.5% to do the same thing. By using a slightly higher concentration, we have succeeded in getting as good detergent action in sea water without the use of synthetics.

Since a mixture of one part of tallow soap and one part of pyrophosphate required a concentration of 4.75% to remove all of the visible carbon black, we endeavored to reduce the necessary concentration through the addition of sodium resinate. Starting with the 50-50 mixture we added sodium resinate in increments of 5% from 5% to 30% and reduced the pyrophosphate by a like amount. The results are plotted in Figure I. You will note that we obtained the most protection with the 50% tallow soap, 25% resinate and 25% pyrophosphate mixture.

Working from the other angle we used a mixture of two parts of tallow soap to one part of resinate and added pyrophosphate in increments of 5% from 5% to 25% decreasing the amount of soap resinate mixture a like amount. The results are plotted on the lower curve of Figure II. These solutions were at a pH of 9.5 which is about the normal pH of a 3% concentration of the salt water soap in artificial sea water. If we raise the pH to 11.0 we obtain the results shown by the upper curve. This result can be obtained by finishing the soap at a slightly higher alkalinity.

As shown above, we found that the most effective composition was two parts of tallow soap to one part of resinate and one part of alkali salts (part of which must be pyrophosphate). Of the alkaline salts we found that 50 to 60% could be metasilicate, N silicate or trisodium phosphate with the balance tetrasodium pyrophosphate. The effectiveness of these combinations is demonstrated.

The soap used in this work was a 42° titer tallow soap produced by Colgate-Palmolive-Peet under the trade name Arctic Crystal. The sodium resinate was a spray-dried material made by the saponification of refined wool rosin and sold under the trade name Dresinate. The alkaline salts were the usual grade used in soap production.

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[Reprinted from Oil & Soap, June 1944 Issue, Vol. XXI, No. 6, Pages 164-166]

Swedish Soap Consumption

The consumption of soft soap in Sweden has been reduced to about 15,000 metric tons. Before the war her consumption of this item was 34,000 tons.

How to Keep Clean

Stirred by medical reports that the lack of soap in occupied Holland was responsible, for epidemics of boils and plagues of lice, the Nazi occupation authorities last month decided to help the Hollanders obtain the soap. According to the *Algemeen Handelsblad* of Amsterdam, official shops have been opened in which bones may be exchanged for soap.

Eleven pounds of bones will fetch one cake of soap, while four-and-a-half pounds of bones will "buy" a package of soap powder. Theoretically this is a nice gesture on the part of the Nazis to alleviate suffering and hardships in Holland. The catch is, where is one to get eleven or even four-and-a-half pounds of bones within a reasonable length of time.

According to a recent Bureau of Food Supply regulation, Netherlanders' weekly meat ration cards call for three-and-a-half ounces, of which two ounces must be meat and the remaining ounce-and-a-half bones.

At this rate a person will have to wait 48 weeks to accumulate the 72 ounces of bones required for a box of soap powder, while more than two years must pass until he can save the 176 ounces of bones needed for the cake of soap.

Indian Naval Stores

Production of rosin in India declined during the first quarter of 1944 to 1,887 long tons. Stocks on hand March 31 totaled 2,580 tons, which was an increase over the previous year.

New Products, Ideas and Processes

Neutralizer Perfume for Sprays

Perfume oil Fruit Berry MM&R not only neutralizes the odor of toxic agents but it also imparts a refreshing fragrance, according to Magnus, Mabee & Reynard, Inc., 16 Desbrosses St., New York 13, N. Y. It is said to have a definite fruity scent, which though light in character has the hiding power to give lasting coverage of heavy odors, a feature of particular interest for sprays used in food plants, bakeries, etc. Samples will be sent to anyone interested.

New Base for Cold Creams

A new base for cold creams known as Pentamull 126-S, a derivative of pentaerythritol, which is supplied as a semi-solid, amber colored jelly is announced by the Heyden Chemical Corp. According to the company, it is possible to use Pentamull 126-S in recognized cold cream formulations and also in the making of absorption bases. Full details about it together with suggested formulas will be sent on request.

Cyclonol to Replace Menthol

The characteristic odor and cooling effect of menthol is afforded by Cyclonol, according to the distributors, W. J. Bush & Co., New York, N. Y. Chemically it is 1-methyl-3-dimethyl - cyclhexanol - (5) and the structural formula is shown in Fig. 1. It may be considered a lower homologue of symmetric or meta menthol which has the structural formula shown in Fig. 2. Cyclonol appears in white crystals with the typical odor of menthol and camphor, has a melting point 34-36° C. and a boiling point 195-197° C. and is stated to be freely soluble in alcohol, chloroform and ether and also in liquid petrolatum and fixed and volatile oils. According to the company the effect on the skin has been tested in comparison with menthol U. S. P. by Applied Research Laboratories and the results show that the effect is practically the same. It is offered to replace menthol satisfactorily in shaving creams and lotions, liniments, analgesic balms, ointments and similar preparations. Incidentally Cyclonol has been accepted by the U. S. Treasury Department as a denaturant for alcohol in place of menthol U. S. P. A booklet giving applications of Cyclonol in pharmaceutical and cosmetic preparations with suggested formulas will be sent to anyone interested.

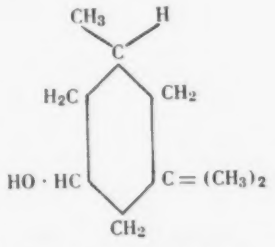


Fig. 1. Graphical Formula

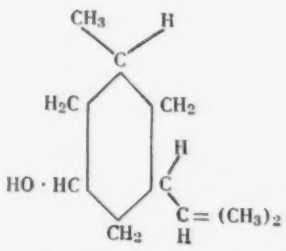


Fig. 2. Graphical Formula

Announcements

Universal Filler

For filling practically any kind of container with almost any kind of material the Universal Filler is offered by the Stokes & Smith Co. In a 4-page illustrated leaflet the company points out that it may be used to supplement large production package filling; for a wide variety of materials and sizes of packages; for high speed production of small weights; where hand filling is uneconomical and for dusty materials. A heavy duty model for larger packages and heavier work or for fully automatic production is offered.

Handy Rust Preventives

A water soluble rust preventive for all types of metals, which may be applied by spraying, brushing or dipping, is offered by The Milburn Co. The product which is known as Plyrustex is furnished in liquid or cream form. It is stated to be nontoxic to the skin and that it adheres firmly, spreads evenly and will not flake. The cream is especially prepared for the prevention of rust corrosion on metals resulting from perspiration.

Book Reviews

SOYBEAN CHEMISTRY AND TECHNOLOGY. Klare S. Markley and Warren H. Goss. 261 pages, well illustrated. Chemical Publishing Co. Inc., Brooklyn, N. Y. Price $3.50.

From a comparatively unimportant crop a few years ago, the soybean has grown so rapidly in volume of production and scope of use that many have not been able to keep up with its robust development.

The authors have been conscientious in their treatment of the subject. The book is based largely upon experiments conducted by the authors, although they have drawn heavily on the work of others, as is attested by the large bibliography.

This timely book treats the soybean from the point of view of its composition and properties in section one, and traces the development and processes of the industry in section two.

THE CHEMISTRY OF SYNTHETIC SUBSTANCES by Emil Dreher. 103 pages, no index. 5½ inches x 8½ inches. Philosophical Library, Inc., New York City. 1943. Price $3.00.

The title of this book is a bit of a misnomer. It is a collection of previously published essays on high molecular chemistry. Considered in this light, the book may have a place in the hands of students and others who already have a fundamental knowledge of the chemistry of large molecules, but who want additional reading on the subject. A better arrangement of essays may have been obtained. The material seems to be quite recent, at least dates back to the start of the war.

This book suffers from the same thing as other books that are made in the same manner, namely, combining a variety of essays. Continuity is lacking, although the information presented is valuable indeed. M. G. deN.

by ARNOLD KRUCKMAN

AN apparently innocuous release by FEA on September 1 announced that beginning October 1 it will no longer be necessary for exporters to obtain release certificates from foreign purchasing missions. The regulation applies to the United Kingdom, Australia, Union of South Africa, New Zealand, India, Newfoundland and most of the other British Empire areas; to the Soviet Union, Belgian Congo, Madagascar, Reunion and other French possessions, including the French West Indies, French Guiana, The Netherlands West Indies, Surinam, the Middle East and Greenland. Hitherto, obviously, under the conditions existing during the war, the American exporter applying to a foreign purchasing mission for a release sometimes found that the mission naturally favored exports from its own nationals and the exporter found himself tangled in a web of delays and stoppages. The relaxation which goes into effect October 1 will enable exporters to ship their goods simply by making applications on Form 149 to FEA, and FEA will issue export licenses for all commodities direct to the applicant. Obviously a freer traffic with the areas mentioned will mean that more American ships will call, for instance, at places like Madagascar, and will be able to bring back commodities such as essential oils and gums which, largely, have lately gone to competing foreign nations largely because our ships were not able often to get into the shipping areas. The FEA simplification should mean freer access to many materials required by the cosmetics, toiletries and flavoring industries.

FRENCH PRODUCTION OF PERFUME

We also hear that a competent French official in the United States has written to the interim French Government, which has its temporary capital at Algiers, and has asked for information about the essential oils that may be found to be available in Southern France, in the areas being rapidly cleared of Germans. It is hoped his enquiry will bring out specific information about the quantities of floral oils that may have been salvaged and hidden. The official also made enquiries about crops, and the condition of the producing areas, the situation of the farmers, and he has asked for a report on the condition of the factories and plants and installations owned by American essential oil people, as well as by French interests in America, and by those of other nationalities in this country. It is understood an intelligent preliminary report is expected before October 1. The thought seems to be that shipments from France may be organized very quickly. Most of the floral oils are expected to come through the port of Marseille and from Lyon and Cannes. It is urged that a consular agent be placed on the job in the area as soon as possible. There has even been an informal discussion of the manner in which the oils found to have accumulated may be distributed. It is assumed the French will immediately swing into production of perfumes and allied commodities; the tentative idea is that they will retain at least 50 per cent of the oils. Part of this will logically come to some of the factories in South America owned by the French. If the program is adopted as discussed the Americans will get 30 per cent of the balance, and the British, 20 per cent. There is a likelihood, of course, that we might have to be content with a 50-50 division with the British, cutting our potential down to 25 per cent.

From Brazil word has reached here that an operator down there is engaged in an apparent effort to corner the Brazilian production of peppermint and menthol for delivery. There is much hush-hush about the identity of the trader, but it is known he has made a standing offer to pay more than anyone else.

SMALL SPEARMINT CROP

Our own peppermint crop is now reported to be normal. Spearmint, on the other hand, is reported much smaller. The tendency to explain it because there have been droughts, and because there is a manpower shortage is challenged by Government specialists. They think the farmers failed to raise the normal crop because they were not paid enough per pound for the last crop. Zanzibar, according to the Department of Commerce, is preparing for a sharp rise in demand for spice cloves. It expects a postwar market considerably greater than the prewar trade. Before the war over half of the Zanzibar clove crop was shipped to Java where the spice was used in the manufacture of cigarettes. Late in August OPA finally settled the long dragging negotiations over the price ceilings on citrus fruit juice concentrates. The Los Angeles office of the OPA last year attempted to initiate a prosecution of an alleged violation of price ceilings which would have involved all producers on the West Coast, and which would have placed them in the position of being compelled to make restitution of many thousands of dollars, plus the fines.

The Washington office of OPA challenged the proceeding of the Los Angeles office of OPA and took the whole matter out of the jurisdiction of the regional office. Apparently, originally the Washington office of

OPA halted the Los Angeles action more upon the grounds of jurisdiction than as a question of the violation of the price ceiling regulation. The various producers in California, however, denied there was any applicable price ceiling, and denied the authority of the OPA to make a price ceiling under the law. The bold stand of the industry arrested proceedings and started a protracted series of negotiations in Los Angeles and in Washington. It is known the legal specialists of OPA came to the conclusion they had no ground for imposing a ceiling as much as three months ago. But Government invariably is reluctant to admit it is in error. The final Order, issued as Amendment 72 to Revised SR1 to GMPR, flatly implies there is no price ceiling on the products, and that they may be sold without regard to any price ceiling with the sky as the limit in a competitive market. The definitions of the products which have no price ceiling are important. Concentrated citrus juice means "the product resulting from the removal of at least 80 per cent by volume of the water from, but containing all the solids of, the natural citrus juice from which it is made." Citrus flavoring base concentrate means, "a food flavoring consisting of concentrated or natural strength citrus juice, citrus oils, sugar in any form, with or without other flavoring substances, and with or without the addition of acidulent, coloring or water." Citrus flavored beverage syrup means, "the product consisting of citrus flavoring base concentrate with added sugar syrup and requiring only the addition of water to produce a finished beverage." The definitions themselves are an important effect of the proceedings. Previously the only applicable definition was an extremely involved technological description of the scientific process of making a concentrate. Apparently the production this year will be better than it was last year. Over 15 billion pounds of fresh citrus fruit is reported by the Department of Agriculture. Civilians will be permitted to use 12 billion seven hundred million pounds. Approximately 6 per cent will be sold as concentrated juices. This volume will constitute 33 per cent of all concentrated juices in the United States. The armed forces and lend-lease clients get the balance of 67 per cent.

ALUMINUM FOR CONTAINERS

Manufacture of aluminum lipstick holders as well as plastic holders has apparently been carried on with success, according to Chief Elmer Tysdal, Cosmetics Section, of the WPB Chemicals Bureau. The production is feasible without conversion of the machinery. It also is reported that aluminum has been successfully used in producing rouge areas. OPA reports aluminum has been used extensively to make containers for toothpowder. There is no restriction now on the use of the metal to make any kind of container. Fourth-quarter allocation of plate for containers has been established at 452,000 tons; 10,000 tons rejects also was provided. Black plate reject is to be made available to package soap paste, and similar materials; the use will be authorized by the addition of a new schedule to the Metal Can Order, M-81.

HIGH DEMAND FOR LANOLIN

Lanolin is in high demand for military uses created by the successes in France. Contrary to expectations it seems likely there will be no lanolin cosmetic allocation for either September, October, November, or December. Pyrophyllite, similar to talc, has grown so difficult to handle that OPA has issued a regulation permitting price increases. Army announces a canvass of the soldiers on all fronts reveals they universally welcome as Christmas gifts small shaving kits, and soap. In the Navy they ask for toilet kits and shaving kits. Nurses, WACS, WAVES and other feminine contingents, ask for perfume, cream cologne, face creams in double jars, cosmetics of all kinds and scented soaps. The wants differ on the various fronts. Soldiers in the Persian Gulf Command ask for shaving kits, bowl or stick shaving cream, mouthwash, hair oil and face lotion. Down in Panama they ask for toilet kits and all kinds of special toiletries. In Hawaii they ask for shaving kits. The Postmaster General urges you be asked again to remind everyone Christmas gifts may be mailed to the armed forces no later than October 15, unless you can show a written request from the soldier, sailor or soldierette. He also asks that it be remembered gifts must be packed in boxes made of metal, wood, solid fibreboard, or strong double-faced corrugated fibreboard, reinforced with strong gummed paper tape or tied with strong twine. Use both tape and twine if possible. Also place the address and the return address on the inside wrapper. Parcel must not exceed five pounds, nor be more than 15 inches long, or 36 inches in length and girth combined. Pack contents tightly.

Prohibition on use of corn in making alcohol has been extended over the fourth quarter. There has been no change in regulations governing its use by the toiletries and flavoring industries. Citric acid has been placed on quarterly allocation. Olive oil, which is free of restrictions, may be imported if it can be obtained. WFA has arranged to import 3,000 tons from Spain. It will be sold through regular trade channels to private interests. Spain has had an extremely large crop of olives. Exports from Malaga have doubled since 1943. The latest report by the Bureau of Agriculture Economics predicts that production of fats and oils in 1944-45 will fall over a billion pounds short of the record output of 11 billion four hundred million pounds in 1943-44. Linseed oil and similar oils also are diminishing. Secretary of Commerce Jesse H. Jones, as Chairman of the Jury of Awards for the American Trade Association Executives, announced one of the awards this year for cooperative services to business men has been made to the Association of American Soap and Glycerine Producers. The citation reads: "For its nationwide Fats Salvage Campaign of educating housewives and retailers to save waste fats, so vitally needed in the production of explosives, synthetic rubber, pharmaceuticals and other Armed Forces requirements. The campaign was said to be the Nation's largest privately-financed effort of the war era." Excise tax on toilet preparations for July totaled $5,908,159.44.

Every price regulation has been amended by OPA in conformity with the new law. The amendment specifies that OPA make no changes in business practices, cost practices or methods, or means or aid to distribution established in any industry except where such action is affirmatively found by OPA to be necessary to prevent regulation evasion.

Prepared Monthly by U. S. Industrial Chemicals, Inc.

U.S.I. CHEMICAL NEWS

September ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1944

Postwar Cosmetics Seen as Big Users of U.S.I. Chemicals

Indalone and BK-5 as well as standbys like ethanol expected to find many new applications

Just about the first postwar idea in every cosmetic manufacturer's mind is to get back to *prewar* raw materials. Substitutes for ethyl alcohol and other cosmetic ingredients have rendered indispensible service in extending the available supplies of these war-scarce chemicals. But the inherent advantages of ethyl alcohol, for example, will make the return of unlimited supplies a significant event to the industry. In addition, of course, many manufacturers have new products ready, waiting for ethyl alcohol and other chemicals to produce them.

New Products Coming

Among the more interesting new products now in prospect, are modifications of the suntan lotions and insect repellents which made such rapid strides just before the war. Precisely what these products are, manufacturers naturally do not reveal. In the field of insect repellents, however, it is certain that wide use will be made of the knowledge gained in developing insectifuges for our armed forces. The government's new all-purpose repellent, in which U.S.I.'s Indalone is a vital ingredi-

(Continued on next page)

New Solvent Blend Gives Better Primer Adhesion

According to a leading process engineer, a mixture of hydrocarbon solvents, such as toluene and xylene, with alcohol in the ratio of two parts to one is most efficient in cleaning surfaces prior to the application of the zinc chromate primer coat. This mixture flashes off the surface quickly and leaves no residue, while the alcohol content is great enough to remove any moisture.

He also states that this mixture has an added application in cleaning the primer coat before the final finishing coat is applied. While it will not remove the primer without abnormal rubbing, it softens it sufficiently to improve the adhesion of the finish coat.

New Foam Insulation Saves Space, Weight

A new, phenol-resin foam plastic insulating material, which weighs only two pounds per cubic foot, is lighter and lower in heat conductivity than rock wool, glass fibre or cork. Its present war uses are secret, but it promises to have many peace time applications because of its self-raising and self-curing properties. The new foam plastic should find special favor with designers of modern prefabricated houses, refrigerators, automobiles and other products, where low-weight, high-efficiency heat insulation is desired.

The director of the laboratory which developed the new insulation explained, "It just grows all by itself. It will foam to 30 times its own size, that is, a quart can of the mixture will expand sufficiently to fill a 7 to 8 gallon receptacle in about 10 minutes. What little heat is required is generated by the mixture itself."

The new product, which resembles molasses in appearance, will begin to foam and expand within a maximum of five minutes after the mixing stops. It cures itself without application of heat or any further attention.

Longer-lived Catalysts For Nitrile Production

In producing nitriles from primary alcohols and ammonia, copper catalysts rapidly lose their effectiveness. Yields range from 80 down to 40 per cent. Two newly patented processes are claimed to increase yield by boosting the activity and stability of the catalyst.

The new processes involve the use, as catalyst, of either reduced silver, reduced copper or, better, a mixture of the two deposited on a partially dehydrated amorphous oxide of aluminum, zirconium, thorium, or other rare earth metal. The latter serves as a dehydrating agent.

While the new catalysts lose effectiveness, they do so much less rapidly than copper alone. Further, they may be reactivated readily by passing air over the catalyst at the temperature of reaction. This is followed by treatment with hydrogen to restore the oxides to the metallic form.

Among the alcohols readily converted to nitriles by this process are n-butanol and ethanol.

U.S.I. Expands Line of Modified Alkyd Specification Resins

New S&W War Resins Well Suited for Government Agency Coatings

Supplementing its announcement of Aroplaz 1375 in the August issue of CHEMICAL NEWS, U.S.I. now announces eight additional Aroplaz resins in which phthalic anhydride content has been adjusted to meet current War Production Board restrictions. The comparative specifications of all nine resins are shown in the box below.

All of these resin vehicles have been designed to help manufacturers to formulate government agency specification finishes at minimum raw-material cost, and with no sacrifice in quality.

Army specification 3-183 requires S&W Aroplaz 1365 blended with S&W Fused Congo No. 5, while Quartermaster Corps specification CQD-200A requires S&W Aroplaz 1205-H. Specification CQD-65B is met with S&W Aroplaz 1130 blended with either urea or melamine.

31.5% Phthalic Content Resins

S&W Aroplaz Resins 1323L, 1323D and/or 1333 will be found eminently satisfactory for producing coatings to meet Army specifications 3-177, 3-178, 3-181 and 3-187, Engineer Corps specification T-1760, and Federal specification TT-E-485.

24% Phthalic Content Resins

A maximum phthalic anhydride content of 24 per cent has been set up for Bureau of Ships specification 52R13 and Maritime Commission specification 52MC21—both for alkyd resin solutions. These government specifications are met by S&W Aroplaz 1240 and 1244 respectively.

16% Phthalic Content Resin

Use of Aroplaz 1375 in the Army and Navy replacement specifications where alkyd resins not exceeding 16 per cent phthalic anhydride content are permitted, was discussed in detail in the August issue of CHEMICAL NEWS.

RESIN SPECIFICATIONS

S&W AROPLAZ	Solution	Visc. G. H.	Acid Value of Solids	Color (GH 1933)	Lbs./Gal. at 20°C.	Phthalic Anhydride Content	Oil Content
1130	60% in Xylol	Z3-Z5	4-6	5-8	8.5	38	40.5
1205H	50% in HSN	Z4-Z5	6-12	7-10	8.0	30-31.5	37
1240	70% in MS	Z-Z1	6-10	6-8	8.0	23-24	64
1244	70% in MS	Y-Z1	6-10	7-12	8.0	23-24	65
1323 Lt.	50% in MS	Z-Z2	5-10	5-10	7.65	30-31.5	54.5
1323 Dk.	50% in MS	Z3-Z4	5-10	16-18	7.70	30-31.5	54
1333	50% in MS	U-W	5-10	5-10	7.65	30-31.5	54.5
1365	60% in Xylol	Z-Z2	18-25	6-9	8.5	38.5	45.5
1375	50% in MS	S-V	12-18	16-18	7.65	15-16	56

September ★ **U.S.I. CHEMICAL NEWS** ★ 1944

Ups Color Fastness of Printed Textiles

Claimed to be resistant to dry cleaning solvents and other detergents, a new pigmented lacquer-in-water emulsion printing paste has been patented for use in the printing of textiles.

The new product employs a lacquer-in-water emulsion containing a pigmented base. The base includes a urea-formaldehyde resin in a solvent consisting of xylol and butanol, resins, and pine oil. Before use, paste is dispersed in a neutral base made from water, resins, and methyl cellulose.

Stabilizes Halogenated Compounds with Acetone

According to a recent patent, halogenated ketones, such as iodoacetone and bromoacetone, can be stabilized with a water-miscible solvent so that the halogen is retained until the compound comes in contact with water. Among the solvents mentioned for this use are acetone and ethyl acetate. It is claimed that this stabilization increases the utility of these halogen compounds as germicides, fungicides, etc. One use suggested for them is the treatment of ships hulls to prevent fouling.

Citrus Pectate Pulp Solves A Synthetic Rubber Problem

Unlike natural rubber, the synthetic product has a decided tendency to adhere to paper and to flow. As it is shipped from manufacturing to process plants in paperboard boxes, or multi-wall paper bags, this tendency to stick to paper greatly complicates its packaging and handling.

A film of citrus pectate pulp in an aqueous dispersion containing some sodium phosphate applied to the paper container, is reported to solve this problem. The film adheres lightly to paper, strongly to synthetic rubber. When package is emptied, the film pulls cleanly from the paper, and carries through with the rubber as a minute, and entirely innocuous constituent.

Postwar Cosmetics

(Continued from preceding page)

ent, provides one excellent example.

In the field of sun-tan lotions it is equally certain that wide use will be made of BK-5, U.S.I.'s light-screening compound. Bright prospects, too, are envisioned for combination suntan-insect repellent products utilizing Indalone's dual properties as a light screening agent and insect repellent.

Wider Usage of Ethanol

There are many reasons why the perfume and cosmetic industry has, since the earliest days, been a heavy user of ethanol. Perhaps first is its wide-range solvent power. However, its astringent action on the skin, its antiseptic power, and its rapid evaporation rate which leaves a pleasant, cool sensation are factors of equal importance.

Still another prominent advantage of ethanol is its pleasant, neutral odor, which entails no camouflaging.

Medicated lotions, shaving lotions, hair lotions and the rest of the strongly alcoholic products may safely be expected to be on the market in ever increasing variety just as soon as conditions permit. The same applies to the mildly alcoholic lotions—skin fresheners, cleaners, deodorants, hair wavers, bleaches and the rest—and to ethanol-containing shampoos, liquid shaving soaps, dentrifices. Yes, even bubble-bath preparations!

Other U.S.I. Products

Among the other U.S.I. products destined to find widening use in postwar cosmetics are urethan (as a patented fixative for hair dyes), amyl acetate (for perfuming and flavoring lipstick), ethyl acetate, amyl acetate and ethyl phthalate (as perfume ingredients), nitrocellulose solutions (for nail enamels), ethyl, butyl, and amyl acetates and dibutyl phthalate as plasticizers in lacquer and as nail polish removers.

Alkyd Resin Used in Wound Coverings

Rayon, impregnated with an alkyd resin, has been accepted by the British Pharmaceutical Codex as a substitute for oiled silk to be used in covering wet dressings to inhibit drying.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

Four new adhesives are offered by their manufacturers for the following applications: **(No. 847)** for back and face of container labels; adhesive is claimed to dry immediately to clear film that resists water, weather, oil, brine: **(No. 848)** for sealing waterproof boxboard containers; adhesive comes as a dry, stable powder: **(No. 849)** for laminating structural wood parts; this resin adhesive is claimed to cure in one hour at 180° F and to have a working life of four hours at 70° F: **(No. 850)** for bonding aluminum to aluminum, iron to iron, or either metal to non-metals; consisting of resin base and curing agent, adhesive acts at 300° F.

U S I

A new synthetic insecticide is offered for replacing scarce natural products in the control of aphids, leafhoppers, and other pests. In killing certain sucking insects, the product is claimed to equal nicotine, rotenone, and pyrethrum. **(No. 851)**

U S I

Continuous dehydration of compressed air or gas is said to be feasible with a new device comprising two ceramic tubes, one water-repellent, the other water-permeable but impervious to air. Designed to protect air tools, gas generators, etc., the device is inserted in the line. The second tube acts as a wick continuously drawing out water without allowing gas to escape. **(No. 852)**

U S I

A new neutralizer perfume is claimed not only to have the hiding power to cover the heavy odors of toxic agents, but in addition to impart a light refreshing fragrance. **(No. 853)**

U S I

A new hot-forming plastic comes in laminated sheets which can be bent, formed or drawn, upon heating to 275° F, according to a recent announcement. Products so formed are said to have high tensile, flexural, and compressive strengths. **(No. 854)**

U S I

Mildew proofing, of cotton, jute, sisal, linen and hemp, is said to be effected with a new product. The product comes as a solution which is compatible with standard water repellents. **(No. 855)**

U S I

Higher adhesion of paints, lacquers, and enamel to surfaces of copper, brass, or bronze is said to be obtained when the surface is first treated with a new product which produces a stable, adherent cupric oxide coating. **(No. 856)**

U S I

A new stearate, claimed to prevent water absorbtion by edible hydroscopic powders, is also offered for use in edible oil emulsions, shortenings, etc. Other uses include emulsification of waxes, oils, and polishes, and as a pour-point depressant for lubricating oils. Dispersible in hot water, product is soluble in alcohols and hot hydrocarbons. **(No. 857)**

U S I

A molasses replacement for use as a binder in foundry work, briquetting, thickening agents and similar applications, is reported to be available in quantity, without allocation limitations. **(No. 858)**

Here and There Among Our Friends

▸ John A. Ewald, former vice-president and general manager in charge of sales of Allied Products, Inc., has been elected president of that company, as well as its affiliated companies, Avon Products, Inc., and Avon Products of Canada, Ltd. He has also been made president of Technical Laboratories, Inc. He now holds the position which was left vacant upon the death of David H. McConnell, who died August 5. Mr. Ewald, who is an authority on direct selling, has been with the company for 25 years. He served as branch manager in Kansas City for ten years, until he came to the New York office in 1929.

John A. Ewald

▸ David Hall McConnell, president of Allied Products, Inc., Avon Products, Inc., Hinz Ambrosia, Inc., Technical Laboratories, Inc., and the California Perfume Co., Inc., since 1936, whose sudden death at the age of 42 years was reported in our last issue, had a remarkable career in the business world. His father, the late David Hall McConnell, Sr., founded the company in 1886 and young Mr. McConnell joined the organization as assistant to his father following his graduation from Princeton University in 1923. Prior to entering Princeton he was educated at Phillips Exeter Academy. Summer vacations during school and college days were largely spent in the company's plant, where, moving from department to department, he obtained a sound grounding in every phase of the manufacture of cosmetics. When he assumed the presidency of the company in 1936 the research facilities were expanded; and the already extensive laboratories at Suffern, N. Y., were enlarged four times in the following eight years. A plant was opened in Montreal and recently another one in Middletown, N. Y., also began operations; and in the past year a research laboratory to discover and develop new products was opened in New York. Along with a keen interest in product experiment he was much intrigued by packaging and the important part it plays in the merchandising of cosmetics. In addition to business he found time for recreation and was a director of the Roosevelt Raceway and the Old Country Trotting Association. He was also a member of the University Club and the Union League Club.

▸ Northam Warren, Jr., vice-president of the Northam Warren Corp., Stamford, Conn., who was formerly sales manager, received notice of his promotion to the rank of major while spending a ten-day leave at the home of his parents in New Canaan, Conn., last month. Major Warren entered the Army as a reserve officer shortly after being graduated from Princeton University. He is a member of the Field Artillery Committee at Fort Benning.

▸ Dr. Melville Sahyun has been appointed divisional vice-president of the Frederick Stearns & Co. Division of Sterling Drug, Inc. Dr. Sahyun has been associated with Stearns since 1934, first as director of biochemical research and since 1943 as director of research.

▸ Louis Bezard has been appointed production manager of Parfums Schiaparelli, Inc., New York, N. Y. He was director of art and purchases for Houbigant for many years.

▸ Michael Stanton, director of Stanton Laboratories, Wyncote, Pa., which produces various thioglycolate compounds, has been elected a member of the Benjamin Franklin Institute in Philadelphia. The Institute has been active in the interests of science and industry for more than two centuries and is one of the oldest and most respected in the United States. Stanton Laboratories, of which Mr. Stanton is the head, has been active in the development of the pure and concentrated form of thioglycolic acid for the biological field and recently launched a cold permanent wave solution.

▸ Robert Condie has been appointed representative for the Province of Ontario, Canada, with office at 21 King Street East, Toronto, for George Lueders & Co., 427 Washington St., New York, N. Y., dealers in, and manufacturers of, essential oils and aromatic chemicals. Mr. Condie attended the University of Edinburgh in Scotland. In 1914 he joined the British army. On leaving the army as Captain in 1918, he resumed his studies and graduated as a pharmaceutical chemist in 1921. He was formerly connected as chemist and general manager of Llewellyn & Co. in Shanghai, China, and Allen & Hanbury of Lindsay, Canada.

Robert Condie

▸ David A. Large has joined Associated Distributors, where he will concentrate on sales promotion for 5-Day Pad Deodorant. Prior to this change he was advertising manager of the Gates Rubber Co. He is a graduate of the University of Iowa.

▸ William V. Fisher, who was recently elected president of the Anchor Hocking Glass Corp., Lancaster, Ohio, has been connected with the company for over a quarter of a century. He was formerly vice-president and general manager. I. J. Collins, who was president of the firm ever since the Hocking Glass Co. was founded 38 years ago, has been elected chairman of the corporation, a newly established office.

▸ Dr. Frank M. Boyles, who has been associated with the flavoring extract and allied industries for many years and who is a former member of the Standards Committee of the Flavoring Extract Manufacturers Association, joined the Joseph Burnett Co., Boston, Mass., August 1 as chief chemist and superintendent of manufacturing processes.

▸ Dr. Alexander Katz, president of Florasynth Laboratories, Inc., New York, N. Y., has been appointed chairman of the Scientific Research Committee of the Flavoring Extract Manufacturers Association. Dr. Katz is well known in flavor circles and has been a frequent contributor of scientific articles on various flavors. Following a trip to the Dallas and New Orleans branches of his company where he conferred with the company's representatives, A. E. Illes of Dallas and Edward Haase of New Orleans, he went to the company's plant in Mexico City where he spent three weeks with the manager of the plant, Fernando Montalvo. After this he underwent a tonsillectomy from which at the present time he is recuperating while on a well earned vacation. He expects to be in New York early next month.

▸ Dr. Albert C. Kish has been appointed chief chemist of The Trade Laboratories, Newark, N. J. He is a graduate of the University of Budapest and for the past decade has been engaged in private research work.

▸ Dr. J. Mark Hiebert has been made general manager of Frederick Stearns & Co., Detroit, Mich., Division of Sterling Drugs. He succeeds Erwin Fauser, who resigned as president when the company was acquired by Sterling, recently. Dr. Hiebert joined Sterling Drugs in 1934, and since that time has held a number of important positions with the organization.

▸ Arthur Hadley is the new West Coast sales representative for Schiaparelli, Inc. He was formerly sales and advertising manager of Wonderstone.

▸ David J. Maxin has been appointed Director of Merchandising Research for Associated Distributors, Inc., and for Dana Perfumes, Inc. Mr. Maxin was formerly Drug Merchandising Director for H. W. Kastor & Sons.

▸ R. M. Kadjar, formerly with Gourielli, Inc., was recently appointed New England and East Coast representative for Parfums Schiaparelli, New York, N. Y.

▸ R. B. Weidinger has become division manager of the Atlantic soap division of the Colgate-Palmolive-Peet Co., Jersey City, N. J. He has been with the company for twenty years.

▸ W. E. Balcom has been appointed Eastern Sales Manager for Pepsodent Co., Chicago, Ill. He was formerly a representative in the North Central States.

▸ Lieut. William S. Fairhurst, son-in-law of Louis Zollinger, president of Tombarel Products Corp., New York, N. Y., sends word from France that he is enjoying a brief rest. Lieut. Zollinger served with the armed forces in Africa and Italy and took part in the battles of Cassino and Volturno. He is much interested in the business situation not only abroad where he has been in service for over fifteen months but also in the progress of the industry in this country. Prior to joining the army he was associated with Tombarel Products Corp.

▸ Michael Lemmermeyer, president of Aromatic Products Inc., New York, N. Y., is taking justifiable pride in the athletic achievements of his slim, attractive, elder daughter, Miss Ruth Lemmermeyer, who has won three individual Westchester County swimming titles and helped to take one team title at the County meet at Playland, Rye, N. Y., this year. Last year in addition to taking the Orienta Beach Club individual point trophy for the second successive time she won the 400-yard freestyle for senior women at the County meet in the record-breaking time of 5:40.6. Although she again won this race this year, the old record was not broken. At her home in Mamaroneck, N. Y., Miss Lemmermeyer has over 70 medals and a variety of cups and trophies which she has won in various swimming contests. Up to six years ago Miss Lemmermeyer's chief hobby was tap dancing; but when the family moved to Mamaroneck with its nearby beach clubs and swimming facilities she abandoned her interest in the terpsichorean art. Her success in swimming is credited to hard, steady work and unceasing training. Her regime includes a swim almost every day and during the Winter five sessions of practice and instruction a week. Last year, incidentally, she traveled to Chicago to help the Women's Swimming Association relay team take a second place in the national relays and to top it off she won the metropolitan junior 100-yard freestyle championship in the fast time of 1:09. Her younger sister, Miss Jane Lemmermeyer, has been competing with the Orienta junior girls' team with creditable success.

▸ Albert E. Mullen, general manager of the Apli Division of Allied Products, Inc., New York, N. Y., and Mrs. Mullen have announced the forthcoming wedding of their daughter, Miss Edith Jessie Mullen, to Frank Mortimer Thompson of Woodlawn, New York City. Miss Mullen was graduated from the College of New Rochelle in 1940 where she specialized in literature and art. Mr. Thompson is radar expeditor for the Western Electric Co. The wedding will take place in Pelham, N. Y., where the bride's family resides.

▸ James M. Crowe has joined the Heyden Chemical Co., New York, N. Y., as chief of the market development work of the company. He was formerly editor of Chemical Industries.

▸ Frank G. Fanning, sales manager for N. I. Malmstrom & Co., Brooklyn, N. Y., was the guest of honor at a testimonial banquet September 7 in Stockholm House, New York, N. Y., in celebration of his 25th anniversary in the organization. The banquet was tendered by his associates in the company and at its conclusion well-deserved tributes were paid to his versatile ability. In addition to his other activities, Mr. Fanning is president of the Salesmen's Association of the American Chemical Industry.

▸ W. Van Alan Clark, for many years vice-president in charge of production for Allied Products, Inc., New York, N. Y., and its affiliated companies, has been elected chairman of the board of directors of the parent company and its associated companies. E. Hall Faile has been elected chairman of the executive committee, the other members of which are W. Van Alan Clark, John A. Ewald and J. S. Stone. Russell Rooks has been elected vice-president of the allied companies.

NEWS and EVENTS

Atlantic Sinking of Essential Oils

The U. S. Navy on August 29th officially confirmed the sinking of a cargo ship bound from Africa to American ports. The cargo included over 100 tons of vanilla beans, and an unknown though reportedly large quantity of Madagascar oils. Being a major shipment, the first since October of last year, with the exception of a small lot received a couple of months ago, its loss in the vanilla trade will be severely felt.

Virtually the same is true of the essential oils. There was a numerous list of consignees, and the quantities sunk were of vital importance to them and the market generally—particularly in Vetivert and Geranium. However, several shipments of Madagascar oils have reached the market on other boats, and other shipments are due to follow. While this loss is a calamity, it is expected to be eased by the prospect of further lots to follow.

Shipping from Reunion, Commores and Madagascar was stagnant ever since the war started. Few American ships were routed to stop at Madagascar, although shipping was available from South African ports, principally Durban.

Finally, after strenuous work with the British authorities, and helpful cooperation of the officials of this Government, arrangements were concluded making possible shipments in British boats from the Islands to Durban, South Africa, for transhipment to U. S. ports. The movement of oils, and also vanilla beans, started several months ago, involving transhipment at Tamatave, and again transhipment at Durban in most cases. It called for involved payment procedure and over-all insurance coverage (which often result in double insurance premium), export okays at Tamatave and Durban, and above all special handling permit for essential oils (not regarded as a war essential), in order to expedite shipments.

In these operations, the cooperation of WPB, WSA and OCR, as well as State Department, were secured. These difficulties surmounted, there still remained the element of time—obvious delays under war conditions. All of which makes this loss by sinking the more regrettable.

However, the pattern is established. Imports are flowing, and it is hoped shipments will continue to arrive at reasonable intervals, to fill the needs of the industry.

Dow Chemical Paper Conservation Program

The Dow Chemical Co., Midland, Mich., has in operation a system of paper conservation which has been responsible for the saving of hundreds of tons of cardboard. Since the war, Dow has purchased baling machines with which all cartons are bound and returned to companies from which original purchase was made. To further conserve paperboard used fibre packs are employed for interplant transfer of many materials. When these packs are absolutely worn out they are baled and shipped to the company of origin.

National Beauty and Barber Manufacturers' Association Convention

The National Beauty and Barber Manufacturers' Association held its third annual convention in Chicago, Ill., September 10-11.

BIMS of Boston Enjoy Golf Meet

More than fifty BIMS of Boston, together with a sizable New York representation, enjoyed a most pleasant golf tournament at Charles River Country Club on August 8. Prize winners were: low gross—Robert Marsh; low net—Ralph Stevenson; kickers—M. E. Nourse; most pars—Charles Bond.

McKesson & Robbins Declares Dividend

The Board of Directors of McKesson & Robbins has declared a dividend of 35 cents per share on the company's common stock, payable September 15 and December 15, to stockholders on record September 1 and December 4, respectively.

Lanolin Allocations Lifted on Aircraft Motors

Allocations will not be required during September and October for lanolin, which is used in greasing aircraft engines, it was announced by the WPB on September 6. Lanolin has been used for the purpose of keeping aircraft engines in good condition while they cross the oceans, so that they may be placed in operation without delay.

Navarre's Address Before Canadian Convention

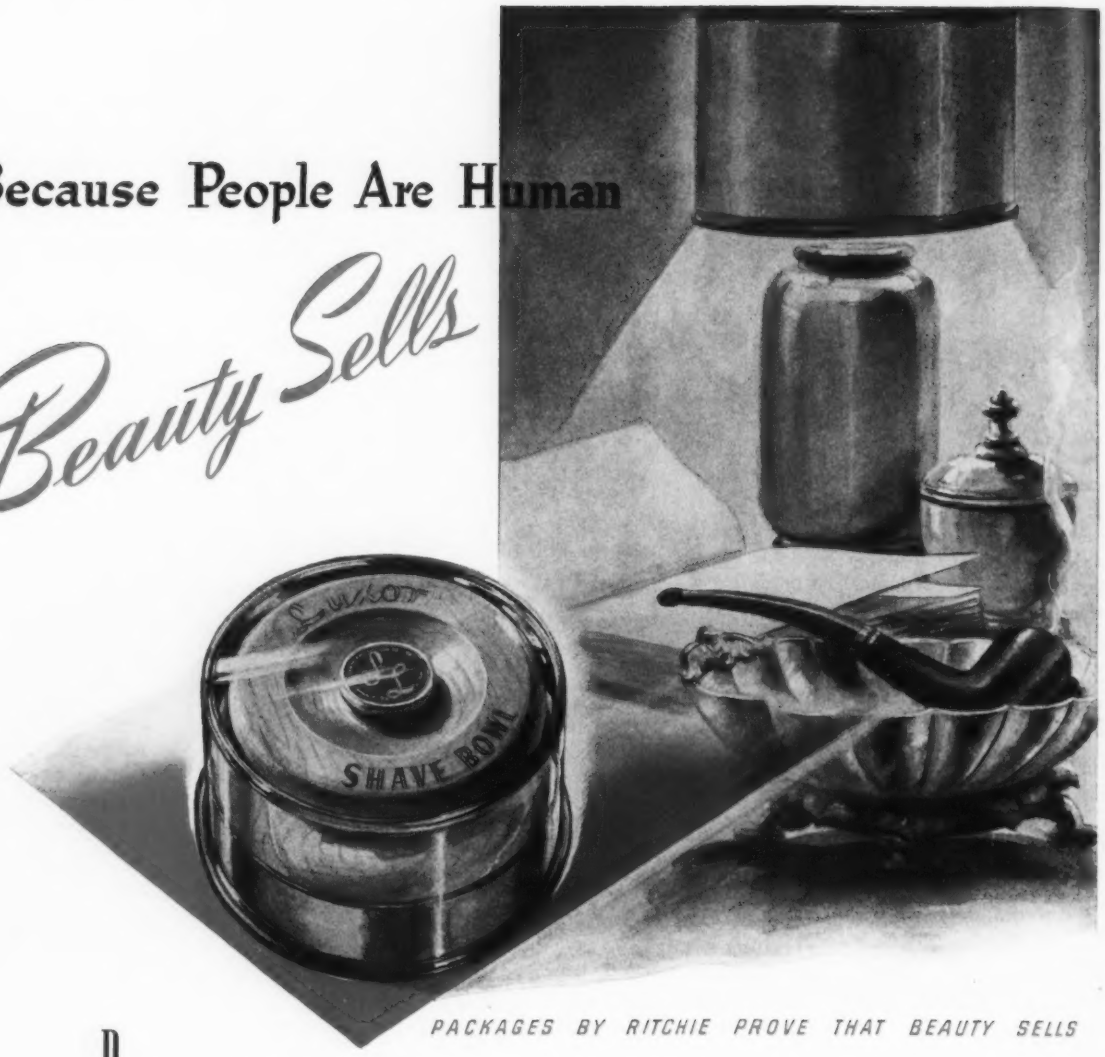
We regret that inadvertently we neglected to mention in the July AMERICAN PERFUMER that the address by Maison G. deNavarre, reported in that issue under the title "Recent Cosmetic Developments and Their Post-War Significance," was given before the sixteenth annual convention of the Toilet Goods Manufacturers' Association of Canada. This convention was held in Quebec on June 12 and 13.

Society of Plastics Industry Fall Convention

The Fall convention of the Society of Plastics Industry is to be held November 13 and 14, at the Waldorf-Astoria, New York, N. Y. Its purpose is mainly to promote the exchange of technical information on military and essential civilian use of plastics. The chairman of the committee of arrangements is Clayton S. Shoemaker, Eastern sales manager, Dow Chemical Co., New York office.

Because People Are Human

Beauty Sells



PACKAGES BY RITCHIE PROVE THAT BEAUTY SELLS

People *shouldn't* judge by appearances. But they do! They *shouldn't* buy things they'll have to sweat to pay for, or a car that strains the budget—just because they're "better looking." They *shouldn't* select a product, from among its competitors, because it comes in a better looking *package*.

But—they DO!

Beauty influences their choice in *everything* from motor cars to mates. And while manufacturers can't *change* human nature, they do *capitalize* on it. That's why most products, from washing machines to radios, have been redesigned, not once but many times—and always to more pleasing forms, proportions, colors and finishes. Not to please manufacturers' fancies—but because *beauty* SELLS!

Beauty—*in packaging*—SELLS!

That is why, in *every* Package by Ritchie—whether it contains an exotic perfume or dry-battery cells—you will always find, in its lines, in its proportions, color or design, a strong eye-appealing quality—elements of beauty.

HOW TO GET A PACKAGE THAT SELLS

Let Ritchie design a package for you and it will have beauty *more than skin deep*. It will have the right material and structure for its job. It will be practical, convenient to use, easy to handle, to stack and display. It will proclaim your product-identity. It will be memorable and attractive. And Ritchie's expanded, war-developed facilities for volume production assure its low cost. Let Ritchie demonstrate how *you* can get a better selling package. No obligation. Write us today.

W. C. Ritchie AND COMPANY

8874 BALTIMORE AVENUE • CHICAGO 17

Set-Up Paper Boxes • Fibre Cans • Transparent Packages

NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

Max Factor "Pan-Cake" Make-up Patents

Through an editorial oversight we regret that the term "pancake" was erroneously used in the July issue of THE AMERICAN PERFUMER to describe a machine for making cake make-up. The trademark "Pan-Cake" was registered by Max Factor & Co., Hollywood, California, September 28, 1937, for cosmetics and related products, and in a decision of the U. S. District Court the registration was held to be valid and subsisting. Accordingly, no one else may use the name "Pan-Cake" in connection with the sale of cosmetics and related products, nor may anyone pass off upon calls for "Pan-Cake" any product not offered by Max Factor & Co. This company is also the owner of United States patents No. 2,034,697 and 2,101,843 covering formulas for cake make-up. All formulas, including those published in the paper "Recent Cosmetic Developments and Their Postwar Significance" read before the annual meeting of the Toilet Goods Manufacturers' Association of Canada, which was published in our July issue, must be considered in the light of these patents.

Superior Products Answers Complaint

Superior Products Co. of Dallas, Texas, has answered a complaint issued by the Federal Trade Commission, which charged misrepresentation, wherein it stated that its principal business is the manufacture of products for jobbers and retailers. It asserts that the complaint was based on statements in printed matter intended for jobbers and dealers, and that certain parts of this printed matter were not included wherein warning against improper use was expressed. Hearings will be held in due course.

Soap Sales Reach War Time High

During the first six months of 1944 soap deliveries made by manufacturers for all purposes reached the highest point for any six-month period since the U. S. went to war.

Federal Wholesale Druggists' Association Forum

Two forums to discuss the economic trends and merchandising trends are being held by the Federal Wholesale Druggists' Association at the Waldorf-Astoria, in New York, N. Y., September 14 and 15. A closed meeting will be held on the 16th.

United Vitamin Products Stipulated

United Vitamin Products, Chicago, has stipulated with the Federal Trade Commission to cease representing "Gra-No-Mor" as a brand name for its product, or that the product will end gray hair, or restore the natural color to the hair.

Packaging Institute to Hold Meeting

The Packaging Institute is to hold its annual meeting at the Hotel New Yorker, New York, N. Y., November 1 and 2. The sessions will be technical in nature and deal largely with questions of materials, machinery and production.

Spain to Sell Olive Oil to the United States

The War Food Administration has made arrangements with Spain for the exportation of 3,000 tons of olive oil to the United States. The oil may be purchased through regular trade channels by private interests. Olive oil is among the oils returned to private trade several months ago and no permit is required for importation.

New York BIMS Hold Final 1944 Golf Tournament

Under the capable direction of Martin Schultes the members of the New York BIMS held their final 1944 golf outing at Wheatley Hills Golf Club, August 24. There were approximately one hundred on hand for this concluding event of the 1944 season, and some rather unusual scores were posted as a result of the heavy winds that complicated the problems of even the best golfers in the group. In keeping with the BIMS' usual policy, prizes consisted of war bonds and stamps and were well distributed among golfers and non-golfers, members and guests. A set of woods, drawn for by lot, went to Edward Bush of Bush Pan America, Inc.

Other prize winners were as follows: Joseph Gartlan, Frank A. Nicholson, Monroe Dreher, Peter Forsman, Wayne Dorland, Paul Dunkel, Sewell Corkran, W. E. Terry, George Waeglin, Howard Mickle, John Sinnott, W. K. Sheffield, E. Bush, James Lawrie, H. C. Brill, C. R. Keeley, Cecil W. Rice, H. S. Miner, Ray Ougheltree, C. F. Alexander, John E. Gabrielsen, Harry Heister, B. H. Badanes, A. H. Bergmann, Dudley Shaw, Ross White.

Servicemen's Gift Set Redesigned by Shulton

In complying with the recent government order on simplified packaging of gift sets Shulton, Inc., has redesigned the Early American Old Spice servicemen's gift set containing brushless shave cream and talcum. The new gift set meets all postal requirements for size and weight for shipment overseas.

Salesmen Aiding Paper Salvage Campaign

In normal times waste paper supplies about 30 per cent of all paper requirements. The situation is now such that this source is being called upon for 66 to 70 per cent by volume. The WPB has sent out a request, which was relayed by the Toilet Goods Association, to firms for help in the drive for paper salvage. The agency asked that salesmen be detached temporarily from selling company products to selling paper collection. Lee Bristol, of Bristol-Myers Co., New York, N. Y., as chairman of the Drug, Cosmetic and Allied Industries Committee, reports that so far the following organizations have gotten behind the proposition: Gillette Safety Razor Co., Colgate-Palmolive-Peet Co., International Cellucotton Products Co., F. W. Fitch Co., Pinaud, Inc., Sterling Drug, Inc., and Bristol-Myers Co. It is hoped that more firms will find it possible to release salesmen for this work, which is so essential to the industry.

Complaint Dismissed Against Rejuvene Manufacturing Co.

Because of the death of the respondent, Ethel J. Cayce, the Federal Trade Commission has dismissed the complaint issued against her. The complaint had charged the respondent, trading as Rejuvene Manufacturing Co., Berkeley, Calif., with misrepresentation in connection with the sale of a cosmetic designated "Rejuvene."

U. S. Will Not Oppose Fitch Excise Tax Appeal

The government has informed the U. S. Supreme Court that it does not oppose a petition on the part of F. W. Fitch Co. for a test on whether advertising and selling expense may be regarded as expense deductible in computing the payment of manufacturer's excise tax on cosmetics and toilet preparations. Fitch has requested a review of a decision of the U. S. Circuit Court of Appeals in St. Louis, which reversed a previous decision on the part of a district court that Fitch was entitled to a refund of taxes. In 1939 the revenue act made provision for such deductions, and in 1941 the excise tax was removed, but there has been no clear-cut ruling on the tax previous to 1939, and numerous cases, involving considerable sums of money, are now pending.

Soap Association Cited for Distinguished Service

The Association of American Soap & Glycerine Producers has been cited by the American Trade Association Executives for distinguished service to industry and the public. Formal presentation of the award will be made at the ATAE's Annual Meeting in November.

Wadsworth Compacts Schedule Heavy Advertising Campaign

The Wadsworth Watch Case Co., Dayton, Ohio, manufacturers of Wadsworth Compacts, has scheduled the heaviest advertising campaign in the history of the company to start next month. Women's and movie magazines will carry the bulk of the advertising, although trade publications are also included.

Pinaud Adopts Insurance Policy for Employees

Pinaud, Inc., has adopted an insurance program which provides its employees with life insurance and two forms of disability insurance. The employer bears the entire cost. Employees receive $1,000 life insurance, and non-occupational disability benefits of $10 per week in case of sickness or injury, and up to $150 for surgical operations.

Lt. Merck Cited for Gallantry

Lt. George W. Merck, Jr., son of George W. Merck, president of Merck & Co., Rahway, N. J., has been cited for gallantry in action in the South Pacific by Admiral Chester W. Nimitz. This is the second citation earned by Lt. Merck. The first was awarded by Admiral Halsey for an earlier action.

New Alcohol Plant Erected in Washington

A new ethyl alcohol plant is being erected at Bellingham, Wash., by the Puget Sound Pulp & Timber Co.

Chamber of Commerce to Hold Distribution Conference

The U. S. Chamber of Commerce is to hold a conference October 23-24 on distribution. The meeting is to be held at the Waldorf-Astoria Hotel, New York, N. Y. Problems to be discussed will be: Reconversion and demobilization; disposal of government surplus property; price control and civilian supply; post-war unity in business; and consumer credit and taxes.

First Course in Marketing Cosmetics to Be Held at New York University

The first course ever offered by any university on the merchandising of drug and cosmetics will be inaugurated at the School of Commerce, Accounts and Finance of New York University on the evening of October 2. Then Marketing 41, a course of fifteen lectures and seminars conducted by Associate Professor Louis Bader and Sidney Picker, who has had many years of practical experience in the drug and cosmetic fields, will be inaugurated. The course will be held Monday evenings at the School of Commerce, southeast corner of Washington Square, New York, N. Y., from 8 to 10 p. m. so as to be available to men and women employed in the daytime. Both the theoretical and practical aspects of the subject will be covered. Among the topics included are: research, packaging, pricing, channels of distribution, dealer relations, point of sale display, legal requirements, sales policies and advertising. Further information about the course may be had direct from the university. Registration dates are September 18 to 29.

Sterling Drug Reports Net Income

Sterling Drug, Inc., and subsidiary companies report a net income of $4,504,907 for the six months ending June 30, equivalent to $2.57 per share. For the same period in 1943, net earnings were $3,934,211, or $2.24 per share. The 1944 figures do not include earnings of Frederick Stearns & Co., whose business was acquired by Sterling on June 30, 1944.

Max Factor & Co. Open New York Buying Office

Max Factor & Company, of Hollywood, California, announces the opening of a New York buying office at 730 Fifth Avenue, New York 19, N. Y., under the management of Charles Francis Flynn. The new branch will function exclusively as a buying office and a central location where ideas for new products, containers, manufacturing devices, equipment, and inventions, pertaining to cosmetics, may be submitted. The office will have no relationship with the sales or distribution of the company's products, which continue to be handled as before through the Los Angeles and Chicago offices of Sales Builders, Inc., sole U. S. distributors of Max Factor Hollywood cosmetics.

Lend-Lease Peppermint Oil Purchase

WFA has been in the market for 9600 pounds of peppermint oil. Immediate delivery was requested. The entire amount was intended for lend-lease.

Fellowship Established by Magnus, Mabee & Reynard

Magnus, Mabee & Reynard, Inc., has established a fellowship in Volatile Oil Research at the Philadelphia College of Pharmacy and Science. The research will be done under the direction of Dr. Austin A. Dodge, assistant Professor of Pharmacy. The fellowship was established in memory of Percy Cecil Magnus, founder of Magnus, Mabee & Reynard.

Cosmeticians National Association Convention to Meet in Chicago

The American Cosmeticians National Association is to hold its silver anniversary convention in Chicago, Ill., September 24, 25 and 26. Postwar planning is to receive marked consideration in the activities.

Army Requests Increased Quantities of Yellow Laundry Soap

The soap industry has been advised that large quantities of yellow laundry soap are urgently needed by the Army for its own use, and for liberated areas. The request is for three times the amount of this soap now going to the Army. Peak production is expected by October.

Definition of Ice Cream Standards Postponed for Duration

Proposed standards for ice cream and related products have been postponed for an indefinite time, due to the shortage of dairy products.

Spazier Adds Unit to its Warehouse

Spazier Soap & Chemical Co. is adding a new section to its warehouse at Santa Monica, Calif.

Arrival of Gums in the New York Market

Arabic gum remained quiet throughout the greater part of last month. Fair sized quantities of tragacanth arrived but industrial demand has been quite active. Supplies in importers hands are believed to be relatively small with quotations remaining firm. Inquiries for benzoin have failed to uncover any unsold parcels of Siam or Sumatra gum.

Dorothy Perkins Opens New Office

Dorothy Perkins Co. is opening new showrooms and office at 500 Fifth Ave., New York, N. Y.

Lend-Lease Purchases of Glycerine

Purchases of glycerine for lend-lease have been made for September-October shipment amounting to 400 tons for each month or a total quantity of 1,600,000 pounds. It was at first planned to purchase 800,000 pounds each month from October to December, but a more cautious policy has apparently been adopted by the government and it is expected that following the delivery of 800 tons for the two months, September-October additional quantities will be purchased which will probably call for deliveries into the early part of next year. The lend-lease purchases will not create any shortage of goods for civilian use, it is pointed out, but will tend to prevent any unusual accumulation of supplies, and it is believed that major producers will end the year with smaller stocks.

Labor Situation Remains Tight

A major trouble suffered by the War Manpower Commission in finding help for war work is the fact that women apparently have concluded the war is over and are quitting employment altogether. This has made a big hole in the manpower estimates. The pinch at this time is particularly troublesome because teachers and students who have worked during the summer have gone back to school. In order to fill these gaps, WMC has created corps of persuaders who are sent from Washington, and who put on a campaign to induce workers to shift from one job to another, or to re-enter employment. This activity may touch the toiletries and allied industries. The only cure is to secure a rating from the local USES, or the PUC, that will enable the employer to show a ceiling and a priority status. Even with the close of the German war it is not expected there will be an immediate relaxation of the need for war workers. In Washington it is assumed the manpower controls will be still tighter. It also is expected employers will be directed to continue at war work. It also is freely anticipated here that wage stabilization and price control will long survive the Japanese war.

Shippers Urged to Conserve Space

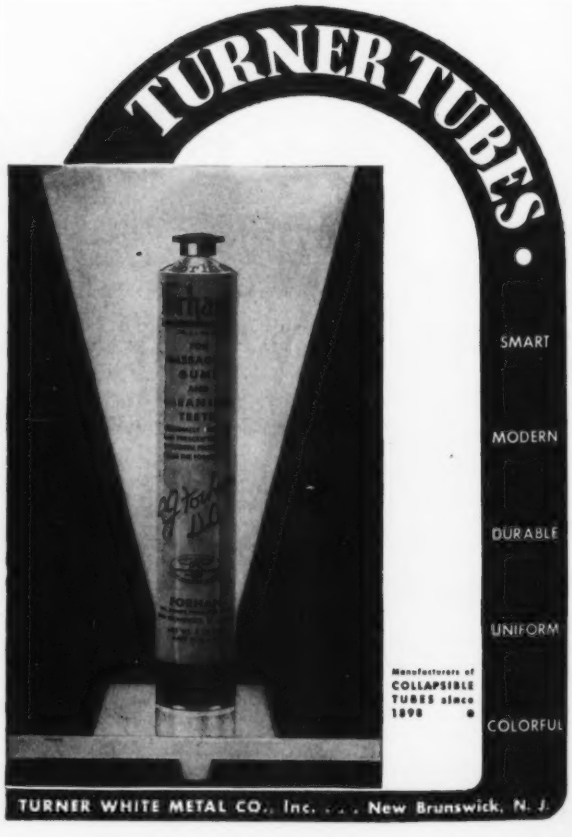
The Transportation and Storage Division of the War Production Board has started a drive to secure the cooperation of shippers and receivers in getting more use out of existing transportation facilities during the coming peak load months. Car loadings are now exceeding those of 1943, hauls are growing longer and loadings per car are moving upward.

Retail Council on Pricing Holds Meeting

As we go to press the Retail Advisory Council of the Consumer Division, of the OPA, is meeting in the Hotel McAlpin, New York, N. Y. This meeting under the direction of Byers Gitchell, director of Consumer Goods Division of the OPA, is being attended principally by retailers, although other groups are represented. The purpose of the gathering is to arrive at a simplification in the procedure of pricing. No concerted agreement on the technic of pricing to be proposed has yet been reached. It is to be expected that further releases will be forthcoming from Washington in the near future. The last meeting held for this purpose was in Washington in June.

Cold Storage Mine Ready for Perishables

First shipments of food to be stored in the Atchison, Kansas, mine, converted to a huge cold storage warehouse, took place at the end of August. The storehouse is located about two miles from Atchison. It was converted for cold storage to ease the strain on cooler storage space, and to make room for foods that will be marketed this fall, and during other peak agricultural production seasons. It will provide space for a wide variety of agricultural products, particularly commodities from the Mid-West and Far West.



R. H. Macy & Co. Starts Campaign

Newspaper advertising is now running in Washington, Philadelphia, Buffalo, Binghamton and Springfield, Mass., in a campaign to popularize drugs and cosmetics identified with R. H. Macy & Co., New York, N. Y., department store.

Circuit Court Rules on Advertising

The U. S. circuit court of appeals in New York, N. Y., has ruled that drug and cosmetic advertisers must carry the same warning in advertising as that appearing on packages against misuse. This is believed to be the first time a federal court has upheld FTC in requiring warnings on advertisements.

Waste Fat Need Will Continue

The end of the war with Germany will not lessen the need for waste fat, according to Lee Marshall, Director of Distribution, War Food Administration. Even victory over Japan will not ease the situation for some time.

Cosmetic Machinery Available Soon

A new policy is expected to be in effect upon the fall of Germany which will make it possible to purchase new machinery and equipment.

Nail Polish Aids Tomato Pickers

A nail polish has been perfected by the Agricultural Department of Purdue University which is to be worn by tomato pickers. Only tomatoes which are as red or redder than the polish are picked which eliminates guesswork and makes for a more uniform pack.

Nix Cosmetics Co. Stipulation

The Nix Cosmetics Co., Memphis, Tenn., sellers and distributors of "Nix Bleach Cream," have stipulated with the Federal Trade Commission to cease disseminating advertising which fails to reveal that the preparation should be applied only to a limited area, that too frequent use should be avoided, that a patch test should be made, and that broken skin should not be treated.

Obituary

Frank T. Andrews, a former employee of Frederick Stearns & Co., died recently at Union City, Tenn. Mr. Andrews was 62 years of age at the time of his death.

Harry Scott Wherrett, chairman of the board of directors of the Pittsburgh Plate Glass Co., died on August 13. He was 68 years old, and had been associated with the company for 53 years. He had long been active in business, civic and philanthropic affairs of the city of Pittsburgh.

L. A. Van Dyk, formerly of Van Dyk & Co., died in Miami Beach, Fla., August 25. He was about eighty years of age. Mr. Van Dyk had been identified with the essential oils industry for more than fifty years.

John H. Harvey died recently at the age of sixty years. He had been engaged in the naval stores business in Screven, Ga., for many years.

Sign of Readjustment in the New York Market

MARKETS generally show increasing signs of a general readjustment to meet the many changes that will come both from a supply standpoint as well as the demand when the war comes to an end in Europe. There is the threat of a check on spending not only by those losing war jobs, but by those who may be indirectly affected by a change in many industries from the manufacture of war materials to civilian goods.

It is difficult to make predictions as to the length of time that will be required for such an adjustment, but in some quarters it is hoped that seasonal influences will tend to partly offset any serious setback. Provisions have been made whereby cosmetic manufacturers may obtain sufficient quantities of alcohol to get off to an early start on merchandise for the Christmas holiday season, and a broader buying movement is expected to come from proprietary manufacturers and pharmaceutical houses, about to start on their fall and winter goods.

ITEMS AFFECTED BY SHORTAGES

A great many civilian goods have virtually disappeared from the market, and in the case of cosmetics, proprietaries, perfumes and certain flavors for the food trade, many items have been seriously affected by shortages of basic materials which have either been entirely cut off by the war or seriously reduced in supply by the inability of manufacturers to obtain sufficient containers, labor or basic items that have been diverted into the manufacture of vital war materials.

Wartime control over distribution and prices tend to make it increasingly difficult to tell what will happen in the months ahead. As controls are eased or entirely removed, markets are likely to ignore outside influences as the old law of supply and demand once again becomes the predominating factor.

The coming election also tends to cloud the general outlook, since its outcome may determine whether government controls over business will be extended, maintained or gradually eliminated. The lanolin market has developed a steadier tone following the recent setback in prices which came as a surprise to many in the industry. Some trade factors point out that the unsettlement in the market was largely due to the allocation of goods. Following some adjustment in distribution, the market displays a steadier tone.

Among the oils, several items in the floral group displayed an easier tone. For the first time in a long while dealers offered Bourbon vetivert oil, and spot prices on geranium and ylang-ylang moved in favor of buyers. Such a development was attributed to fresh lots arriving from Madagascar. The invasion of Southern France, regarded as the forerunner of liberation for the Grasse area which is the principal section of France where essential oils and perfume raw materials are produced for world markets in normal times also served to lift the hopes of major importers regarding replacements. Liberation of such well known ports as Marseille and Bordeaux all served to have a psychological influence without doubt.

PRICE CONTROL ON SPEARMINT OIL

Government control of prices on spearmint oil has created a great deal of confusion. With OPA having refused to raise the spearmint ceiling, distributors and producers are facing the further discouraging fact that 1944 production is indicated as likely to be smaller than last year by approximately 28,000 pounds. Indicated production this year as given by the Bureau of Agricultural Economics is 211,000 pounds in contrast to 239,000 pounds produced last year. Low price ceilings of major dealers is likely to keep them aloof from the item, and after confectioners obtain their usual requirements not much oil is likely to be left for other consumers. The August 1 forecast on peppermint oil production was 1,034,000 pounds. Last year's production amounted to 826,000 pounds. Drought has been affecting harvesting conditions in some areas, however, and it is quite possible final production figures will reflect oil yield per acre less than seemed likely at the beginning of last month. Toward the close of last month reports indicated that the War Food Administration had been asking for bids on about 9,600 pounds of peppermint oil. The outlook is not particularly encouraging.

PRICES IN THE NEW YORK MARKET

(Quotations on these pages are those made by local dealers, but are subject to revision without notice)

ESSENTIAL OILS

Almond Bit, per lb.	3.50@	4.00
S. P. A.	4.75@	5.10
Sweet True	1.50@	1.75
Apricot Kernel	.56	Nom'l
Amber, rectified	2.25	Nom'l
Angelica Root	125.00@	150.00
Anise, U. S. P.	3.85@	4.00
Imitation	1.75@	2.10
Aspic (spike) Span.	3.75@	4.00
Avocado	1.05@	1.25
Bay	1.45@	1.70
Bergamot	25.00	Nom'l
Brazilian	10.00@	10.25
Artificial	4.00@	9.25
Birch, sweet	3.35@	5.25
Birchtar, crude	2.25	Nom'l
Birchtar, rectified	4.25	Nom'l
Bois de Rose	5.10@	5.35
Cade, N. S. P.	1.00@	1.25
Cajeput	2.25@	3.00
Calamus	22.50@	35.00
Camphor "white," dom.	.35@	.45
Cananda, native	11.50@	14.00
Rectified	14.25@	16.00
Caraway	20.00@	22.00
Cardamon	28.00@	32.00
Cassia, rectified, U. S. P.	12.00	Nom'l
Imitation	3.75@	
Cedar leaf	1.35@	1.60
U. S. P.	2.65@	3.34
Cedar wood	1.00@	1.10
Celery	20.00@	24.00
Chamomile	150.00	Nom'l
Cinnamon	12.00@	15.00
Citronella, Ceylon	.90@	1.05
Java	3.25	Nom'l
Cloves, Zanzibar	1.65@	1.75
Copaiba	.85	Nom'l
Coriander	30.00@	32.00
Imitation	12.00@	14.00
Croton	3.75@	4.00
Cubebs	5.25	Nom'l
Cumin	8.25@	10.00
Dillseed	5.50	Nom'l
Erigeron	2.25@	5.00
Eucalyptus	1.55	Nom'l
Fennel, Sweet	4.00	Nom'l
Geranium, Rose, Algerian	13.00@	15.00
Bourbon	12.50@	13.50
Turkish	4.75@	5.80
Ginger	21.00@	22.00
Guaiac (Wood)	4.00@	4.80
Hemlock	1.50	Nom'l
Substitute	.55@	.60
Juniper Berries	12.50@	16.00
Juniper Wood, imitation	.75@	.80
Laurel	5.00	Nom'l
Lavandin	8.25	Nom'l
Lavender, French	10.00@	12.00
Lemon, Calif.	3.25	Nom'l
Lemongrass	1.65@	1.80
Limes, distilled	7.00@	7.75
Expressed	12.50@	13.00
Linaloe	3.65@	4.00
Lovage	95.00	Nom'l
Marjoram	7.25@	7.50
Neroli, Bigarde P.	300.00@	375.00
Petale, extra	275.00@	340.00
Olibanum	5.00@	5.75
Opopanax	25.00@	38.00
Orange, bitter	4.00@	4.25
Brazilian	1.35@	1.50
Calif., exp.	1.75@	
Orris Root, abs. (oz.)	135.00@	
Artificial	36.00@	40.00
Pennyroyal, Amer.	4.00@	4.10
European	4.00	Nom'l
Peppermint, natural	7.50@	
Redistilled	8.05@	
Petitgrain	1.70@	2.00
Pimento	5.25@	8.00
Pinus Sylvestris	4.25@	5.00
Pumillonis	4.25	Nom'l
Rose, Bulgaria (oz.)	25.00@	32.00
Synthetic, lb.	45.00@	55.00
Rosemary, Spanish	2.00@	2.10
Sage	5.85@	6.50
Sage, Clary	35.00	Nom'l
Sandalwood, East India	7.00	Nom'l
Sassafras, natural	1.85@	2.10
Artificial	1.00@	1.50
Snake root	12.00	Nom'l
Spearmint	4.00	Nom'l
Thyme, red	2.60@	3.25
White	3.25@	5.00
Valarian	40.00	Nom'l
Vetivert, Java	50.00	Nom'l
Bourbon	30.00@	36.00
Wintergreen	5.25@	8.50
Wormseed	5.25	Nom'l
Ylang Ylang, Manila	38.00	Nom'l
Bourbon	28.00@	32.00

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PROFESSIONAL SERVICE

CLASSIFIED ADVERTISEMENTS

The rates for advertisements in this section are as follows: Business Opportunities, $1.00 per line per insertion. Situations Wanted and Help Wanted, 50c per line per insertion. Please send check with copy. Address all communications to THE AMERICAN PERFUMER, 9 East 38th St., New York.

BUSINESS OPPORTUNITY

WANTED: 2—Dry Powder Mixers; 2—Pony Mixers; 2—Tablet Machines; 1—Filter; 3—Kettles; 2—Filling Machines. No dealers. Write Box 2353, The American Perfumer and Essential Oil Review.

Lines Wanted

West African Distributor serving the cosmetics, soaps, perfumes and flavors trade in West Africa is prepared to negotiate for Co-operative Export Selling Agency. Can handle twelve assorted manufactures. Remuneration by salary and bonus. Address your correspondence to Olayimika Fasanya, 14, Artesian Road, Bayswater, London, W.2.

NAILING MACHINE WANTED: We want used Morgan or Doig wood box Nailing Machines at once. State make, size, best cash price. Chas. N. Braun Machinery Co., Fort Wayne, Indiana.

OLD ESTABLISHED CANADIAN distributor of raw materials, covering all of Canada with warehouses in Montreal and Toronto desires to represent progressive American manufacturers of essential oils, perfume bases, aromatics, white oils, lanolin, flavors and allied products. Will handle non competing lines only. Can give unusual service. H. L. Blachford Ltd., 977 Aqueduct St., Montreal, Canada.

WELL ESTABLISHED wholesale drug house in Canada would consider additional lines for jobbers or drug trade. Manufacturing and packaging equipment available. Write Box 2498, The American Perfumer and Essential Oil Review.

For Sale: Small job lot imported French perfume bottles, boxes; powder boxes and other supplies. Write Box 2496, The American Perfumer and Essential Oil Review.

SITUATION WANTED

PERFUMER, production man also thoroughly experienced in formulating, desires change. Speaks Spanish. References. Write Box 2494, The American Perfumer and Essential Oil Review.

COSMETIC PRODUCTION MANAGER with 10 years' experience in manufacturing, packaging and bottling, production methods and inventory control, purchasing and personnel. Can obtain WMC release for non-essential occupation. College graduate. Write Box 2497, The American Perfumer and Essential Oil Review.

CHEMIST—PhD—Research and Production Manager. 15 years' experience formulation and development manufacturing cosmetics, pharmaceutical preparations. Write Box 2500, The American Perfumer and Essential Oil Review.

CHEMICAL ENGINEER—draft deferred. Experienced in cosmetics, perfumery, flavors, sanitary products. Work included management, manufacturing and development. Seek better connection. New York Metropolitan Area. Write Box 2499, The American Perfumer and Essential Oil Review.

HELP WANTED

BEVERAGE FLAVOR CHEMIST with past experience in cola and true fruit flavors on consulting or assignment basis to develop worthwhile formulae. Submit full details as to experience. Write Box 2495, The American Perfumer and Essential Oil Review.

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TERPENELESS OILS

Bay	2.75@ 3.00
Bergamot	49.00 Nom'l
Grapefruit	65.00@
Lavender	28.00 Nom'l
Lemon	40.00@ 55.00
Lime, ex.	80.00@100.00
Distilled	60.00@ 67.00
Orange sweet	57.00@100.00
Peppermint	13.00@ 13.25
Petitgrain	3.75@ 4.00
Spearmint	5.00@ 6.00

DERIVATIVES AND CHEMICALS

Acetaldehyde 50%	1.90@ 2.75
Acetaphenone	1.60@ 1.75
Alcohol C 8	7.50 Nom'l
C 9	14.00 Nom'l
C 10	7.75@ 12.00
C 11	11.50 Nom'l
C 12	7.20@ 8.50
Aldehyde C 8	22.50@ 28.00
C 9	32.00 Nom'l
C 10	22.00@ 29.00
C 11	22.00 Nom'l
C 12	25.00@ 30.00
C 14 (so called)	9.25@ 9.75
C 16 (so called)	7.65@ 8.25
Amyl Acetate	.50@ .75
Amyl Butyrate	.90@ 1.10
Amyl Cinnamate	4.50@ 5.80
Amyl Cinnamate Aldehyde	2.75@ 5.00
Amyl Formate	1.00@ 1.75
Amyl Phenyl Acetate	3.75@ 4.00
Amyl Salicylate	.85@ 1.00
Amyl Valerate	2.10@ 2.75
Anethol	2.75@ 2.85
Anisic Aldehyde	3.15@ 4.00
Benzophenone	1.15@ 1.30
Benzyl Acetate	.65@ 1.00
Benzyl Alcohol	1.25@ 2.00
Benzl Benzoate	1.10 Nom'l
Benzyl Butyrate	2.25@ 3.00
Benzyl Cinnamate	5.15 Nom'l
Benzyl Formate	2.50@ 3.00
Benzyl-Iso-eugenol	10.25 Nom'l
Benzylidenacetone	2.25@ 3.40
Borneol	1.80 Nom'l
Bornyl Acetate	2.00 Nom'l
Bromstyrol	5.00 Nom'l
Butyl Acetate	.11@ 14½
Cinnamic Acid	3.75@ 4.50
Cinnamic Alcohol	3.75@ 4.00
Cinnamic Aldehyde	1.75 Nom'l
Cinnamyl Acetate	10.40@ 12.00
Cinnamyl Butyrate	12.00@ 14.00
Cinnamyl Formate	10.00@ 13.00
Citral, C. P.	3.85@ 4.25
Citronellol	6.50@ 7.00
Citronellyl Acetate	8.60@ 9.20
Coumarin	3.00@ 3.50
Cuminic Aldehyde	8.00@ 11.25
Diethylphthalate	.24 Nom'l
Dimethyl Anthranilate	4.55@ 5.00
Ethyl Acetate	.25 Nom'l
Ethyl Anthranilate	5.50@ 7.00
Ethyl Benzoate	.90@ 1.15
Ethyl Butyrate	.75@ .90
Ethyl Cinnamate	3.25@ 3.75
Ethyl Formate	.60@ 1.00
Ethyl Propionate	.80 Nom'l
Ethyl Salicylate	.90@ 1.00
Ethyl Vanillin	5.25@ 6.00
Eucalyptol	2.85 Nom'l
Eugenol	3.00@ 3.25
Geraniol, dom.	5.00@ 6.00
Geranyl Acetate	4.00 Nom'l
Geranyl Butyrate	8.20@ 8.50
Geranyl Formate	9.25@ 10.00
Heliotropin, dom.	6.00 Nom'l
Hydrotopic Aldehyde	15.00@ 18.00
Hydroxycitronellal	7.75@ 10.00
Indol, C. P.	23.00@ 26.50
Iso-borneol	1.00@ 1.10
Iso-butyl Acetate	1.25@ 2.00
Iso-butyl Benzoate	1.50@ 2.60
Iso-butyl Salicylate	2.70@ 3.00
Iso-eugenol	4.00@ 4.85
Iso-safrol	3.00 Nom'l
Linalool	7.50@ 8.00
Linalyl Acetate 90%	7.00@ 8.75
Linalyl Anthranilate	15.00@
Linalyl Benzoate	10.50@
Linalyl Formate	9.00@ 12.00
Menthol, Brazilian	16.50@
Methyl Acetophenone	1.80 Nom'l
Methyl Anthranilate	2.75@ 3.00
Methyl Benzoate	.70@ 1.10
Methyl Cellulose, f.o.b. shipping point	.60 Nom'l
Methyl Cinnamate	2.50@ 3.75
Methyl Eugenol	3.50@ 6.75
Methyl Heptenone	3.50 Nom'l
Methyl Heptine Carbonate	40.00@ 60.00
Methyl Iso-eugenol	5.85@ 10.00
Methyl Octine Carbonate	24.00@ 30.00
Methyl Paracresol	2.50 Nom'l
Methyl Phenylacetate	3.75@ 4.00
Methyl Salicylate	.35@ .38
Musk Ambrette	9.50 Nom'l
Ketone	4.50@ 9.70
Xylene	1.65@ 2.50
Neroline (ethyl ether)	2.00@ 3.15
Paracresol Acetate	2.55@ 3.00
Paracresol Methyl Ether	2.60 Nom'l
Paracresol Phenyl-acetate	6.50@ 8.50
Phenylacetaldehyde 50%	3.00@ 3.35
100%	4.50@ 5.00
Phenylacetic Acid	3.00@ 3.75
Phenylethyl Acetate	2.50@ 4.10
Phenylethyl Alcohol	2.40@ 3.00

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Phenylethyl Butyrate	3.75@	4.25
Phenylethyl Propionate	3.50@	4.75
Phenyl Formate	12.25@	
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Phenylpropyl Acetate	8.00@	10.00
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Scatol, C. P. (oz.)	5.35@	6.00
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Styrolyl Alcohol	9.25@	12.00
Vanillin (clove oil)	2.60	Nom'l
(guaiacol)	2.35	Nom'l
Lignin	2.35	Nom'l
Vetivert Acetate	25.00	Nom'l
Violet Ketone Alpha	18.00	Nom'l
Beta	15.00	Nom'l
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Yara Yara (methyl ester)	2.00@	3.10

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Angostura	2.40@	2.75
Vanilla Beans		
Mexican, whole	8.75@	9.25
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Acetone	.8½@	.09
Almond meal	.25@	.35
Ambergris, ounce	13.50@	18.50
Balsam, Copaiba	.60@	.75
Peru	1.10@	1.25
Beeswax, bleached, pure		
U. S. P.	.58	Nom'l
Yellow, refined	.53½	Nom'l
Bismuth, subnitrate	1.20@	1.22
Borax, crystals, carlot ton	55.50@	58.00
Boric Acid, U. S. P., cwt.	6.95@	7.55
Calamine	.18@	.20
Calcium, phosphate	.08@	.08¾
Phosphate, tri-basic	.09@	.10
Camphor, domestic	.69@	.84
Castoreum	13.00@	17.00
Cetyl Alcohol	1.75	Nom'l
Pure	2.25	Nom'l
Chalk, precip.	.03½@	.06½
Cherry Laurel Water, jug, gal.	3.60@	4.00
Citric Acid	.21	Nom'l
Civet, ounce	22.00@	28.00
Clay, colloidal	.07@	.15
Cocoa Butter, lump	.25½@	.27
Cyclohexanol (Hexalin)	.30@	.50
Fuller's Earth, ton	15.00@	33.00
Glycerin, C. P., drums	.18¼@	.18¾
Gum Arabic, white	.42@	.45
Amber	.11¾@	.12½
Powdered, U.S.P.	.18@	.21
Gum Benzoin, Siam	5.00	Nom'l
Sumatra	1.40	Nom'l
Gum Galbanum	1.80@	2.00
Gum Myrrh	.50@	.55
Henna, pwd.	.30@	.35
Kaolin	.05@	.07
Labdanum	3.25@	5.00
Lanolin, hydrous	.30@	.34
Anhydrous	.31@	.35
Magnesium, carbonate	.09@	.10¾
Stearate	.24@	.27
Musk, ounce	50.00	Nom'l
Olibanum, tears	.18@	.35
Siftings	.11½@	.13
Orange Flower Water, gal.	1.75@	2.25
Orris Root, African, pwd.	1.10@	1.15
Paraffin	.06¼@	.09
Peroxide	1.10@	1.75
Petrolatum, white	.06¼	.08½
Quince Seed	1.75@	2.00
Rice Starch	.10	Nom'l
Rose Leaves, red	3.45@	4.00
Rose Water, gal.	6.50@	8.00
Rosin, M. per cwt.	6.28@	
Salicylic Acid	.35@	.40
Saponin	2.00@	2.50
Silicate, 40°, drums, works		
100 pounds	.80@	1.20
Soap, neutral, white	.20@	.25
Sodium Carb.		
58% light, 100 pounds	1.35@	2.35
Hydroxide, 76% solid, 100 pounds	2.60@	3.75
Spermaceti	.26@	.27
Stearate Zinc	.30@	.31
Styrax	1.40@	1.60
Tartaric Acid	.64	Nom'l
Tragacanth, No. 1	5.00@	5.25
Triethanolamine	.34½	Nom'l
Violet Flowers	1.75@	2.00
Zinc Oxide, U. S. P. bbls.	.10½	.10¾

OILS AND FATS

Castor No. 1, tanks	.13@	
Cocoanut, Manila Grade, c.i.f., tanks	.0835@	
Corn, crude, Midwest, mill, tanks	.12¾@	
Corn Oil, distilled, drums	.16¼@	.16½
Cotton, crude, Southeast, tanks	.12¾@	
Grease, white	.08⅞@	
Lard	.1380@	
Lard Oil, common, No. 1 bbls.	.14@	
Palm, Niger, drums	.0865	
Peanut, blchd., tanks	.15@	
Red Oil, distilled, tanks	.12½@	
Stearic Acid		
Triple Pressed	.18⅝	Nom'l
Double Pressed	.15⅞@	.16⅞
Tallow, acidless, barrels	.14¼@	
Tallow, N. Y. C., extra	.08⅝@	
Whale oil, refined	.1232	Nom'l

Production Control and the Analysis of Cosmetics

by MAISON G. DENAVARRE, Ph.C., B.S.

Technical Editor of the American Perfumer & Essential Oil Review and of Elaboraciones y Envases, Special Lecturer in Cosmetics, Wayne University, College of Pharmacy, Consulting Chemist

Seventh Installment

The sixth installment was published in the preceding issue. Subsequent installments will appear in forthcoming issues.

ACKNOWLEDGMENTS

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CHAPTER IV

(continued)

Physical and Chemical Testing
Gravimetric and Volumetric Methods

P-82—A MELTING POINT METHOD FOR MOLDED WAX, FAT, AND OIL MIXTURES

(Gorchoff's Method)

APPARATUS

A 30 cm x 30 cm (12" x 12") Pyrex jar normally used for Constant Temperature baths is filled with 10,000 cc of Calcium Chloride (commercial grade) brine of S/G of 1.4. For heating, a 1500 watt stainless steel flexible Lo-Lag Immersion Heater bent to conform to the jar is used. To control the rate of temperature, it is connected with a Variac Variable Voltage Transformer with a capacity of 7.5 amperes at 115 volts. An electric stirrer is used to maintain uniform temperature throughout the bath. See Figure 89.

Two ASTM Thermometers of a range 38-82°C, graduated in 1/10° subdivisions, are used. They are calibrated against a Bureau of Standards Certified Thermometer, corrected for emergent stem, and placed in different sections of the bath to check the uniformity of temperature. A clear glass plate 15 cm x 0.3 cm thick is used to mount the samples. A triangular legged support approximately 10 cm tall is used as the base for the plate.

A coil of 0.5 inch copper tubing is connected to cold water and is used to cool the bath between runs, if needed; 30 minutes are required to cool the bath using this device.

OPERATION

The wax mixture is dissolved and cast approximately 15°C (27°F) above its solidifying temperature, allowed to cool, and taken from the mold. A cork borer tube may be used. To average the results this laboratory runs quadruplicate samples. The molded stick is cut into discs 6-8 mm thick, weighing approximately .75 grams, and placed 2 cm apart on cleaned plate. As many as 30 discs can be run at one time with this size plate. The discs are fused to the plate by applying a flame to underside of glass, and allowed to cool.

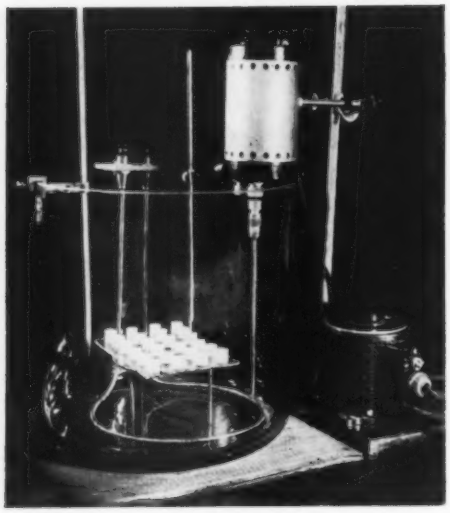

Figure 89. Gorchoff Melting Point Apparatus

The discs are now examined, and if air pockets are present in any, these are refused. The plate is allowed to cool, and the excess wax is scraped away from the periphery of the discs.

The plate thus mounted is placed on the support immersed in the bath, and the Thermometers set so that the bulbs are even with the plate. The stirrer and heater are started. For this system, the Transformer is set at 115 volts, which raises the temperature at the uniform rate of 1.7°C (3°F) per minute. When the temperature reaches a point about 3°C (5.4°F) below estimated melting point, the stirrer is stopped, and the voltage set at 75. At this setting the rate of temperature rise is 0.5°C (0.9°F) per minute, which is the rate specified in most techniques (2). If this rate is not adhered to firmly, high results will invariably be obtained.

The discs become translucent about 1°C before separation from the plate. The temperature at the instant the discs leave the plate is recorded as the melting point.

P-83—MELTING POINTS

(U.S.P.)

For the purpose of the Pharmacopoeia the melting points or ranges of solids are defined as those points or ranges of temperature at which or within which they are observed to melt when treated as directed in the following tests:

For the determination of their melting points, Pharmacopoeial solids are divided into three classes:

Class I—Materials readily reduced to a powder.

Class II—Materials not readily reduced to a powder, such as fats, fatty acids, paraffin, and waxes.

Class III—Petrolatum.

Apparatus Required

1. A round-bottom glass tube of from 30 mm to 40 mm internal diameter and about 10 cm long, flaring slightly at the top like an ordinary test tube. The walls of the tube are not more than 1.5 mm thick at any point. The tube is made of glass which will withstand heating over an open Bunsen flame.

2. A stirring device, which may be made from a glass rod of about 2 mm external diameter. It is made circular at the end to fit the container (1) and is bent twice at right angles above the top of the container to bring its outer end within reach for convenient manipulation.

Any other melting point apparatus or method, capable of equal accuracy, may be used.

3. A standard thermometer of Type I or Type II, covering the desired range of temperature.

4. An auxiliary thermometer of Type I.

5. A capillary glass tube about 6 mm. long and from 0.8 to 1.2 mm internal diameter, the walls from 0.2 to 0.3 mm thick and the tube closed at one end.

Procedure for Testing Materials of Class I

Reduce the sample to a very fine powder, and unless otherwise directed, render it anhydrous when it contains water of hydration by drying it at the temperature specified in the text, or, when the substance contains no water of hydration, by drying it for 24 hours over sulfuric acid.

Select a bath suitable for the melting temperature to be determined, and fill the container to a depth which will permit of such immersion of the thermometer that the upper end of the bulb will be from 2 to 3 cm below the surface of the bath and the lower end of the bulb about equally distant from the bottom of the container.

Charge the capillary glass tube with sufficient of the dry powder to form a column in the bottom of the tube from 2.5 to 3.5 mm high when packed down as closely as possible by moderate tapping on a solid surface. Attach the capillary tube to the thermometer by wetting both with the liquid of the bath or by means of a piece of platinum wire and adjust its height so that the material in the capillary is beside the thermometer bulb.

Attach the auxiliary thermometer, as shown in the illustration, so that the center of its bulb is as close as possible to the stem of the main thermometer at a point midway between the surface of the bath and the graduation for the supposed melting point. In order to prevent the heat from the burner or currents of cold air from affecting the temperature of the auxiliary thermometer, it is advisable to adjust to the stem of the main thermometer a movable platform made of stiff paper, having its edges folded so as to form a box-like shield surrounding the bulb of the auxiliary thermometer.

Heat the bath by means of a free Bunsen flame until a temperature 30 degrees below the supposed melting point is reached, then carefully regulate the rate of rise in temperature to about 3 degrees per minute until the material begins to melt (the temperature at which the column of the sample is observed to collapse definitely against the side of the tube at any point is defined as the beginning of melting), and from that time carefully regulate the rise in temperature to about one-half degree per minute until the melting is complete. (The temperature at which the material becomes liquid throughout is defined as the end of melting). The bath must be stirred constantly throughout the heating. Unless otherwise directed, the bath may be preheated to a temperature 30° below the supposed melting point before attaching the capillary.

The result thus obtained as the melting interval must be adjusted by applying the calibration correction and that for the emergent stem, as follows:

Note the temperature registered by the auxiliary thermometer at the end of the melting of the substance and

calculate the emergent stem correction by the following formula:

$$\text{correction} = 0.00015 \times N\ (T - t)$$

in which the N represents the number of degrees of emergent stem from the bath, T the temperature at the end of melting, and t the temperature registered by the auxiliary thermometer; the correction to be added to the observed reading of the main thermometer.

To avoid the necessity of determining the emergent stem correction each time a melting point is taken, the correction for intervals of 10 degrees may be determined (at a room temperature of about 25°C) and the results plotted on graph paper, the temperatures of the bath being represented by the abscissae and the corrections by the ordinates. The correction for any intermediate temperature can then be interpolated.

Note: Suggestions regarding liquids to be used for baths in testing materials belonging to Class I:

For temperatures up to 200°C, a purified, concentrated sulfuric acid is a suitable bath. For higher temperatures, up to about 350°C, a pure grade of cottonseed oil (almost colorless) will serve for a limited number of determinations. Other, though less desirable, substitutes for sulfuric acid for use at high temperatures are: (1) a pure grade of paraffin which has been freshly distilled; (2) clean, white, hydrogenated vegetable oil. A very satisfactory bath is prepared by cautiously boiling together, for from 5 to 10 minutes under a hood, a mixture of 70 parts of sulfuric acid and 30 parts of potassium sulfate, stirring constantly until the potassium sulfate is completely dissolved.

Procedure for Testing Materials of Class II

Carefully melt the material to be tested at as low a temperature as possible and draw it into a capillary tube, which is open at both ends, to a depth of about 10 mm. Cool the charged tube at 10°C, or lower, for 24 hours, or in contact with ice for at least 2 hours. Then attach the tube to a standard thermometer by means of a rubber band, adjust and heat it in a water bath, as directed under procedure for testing materials in Class I, except that, within 5° of the assumed melting temperature, the rate of rise of temperature is carefully regulated to about one-half degree per minute.

The temperature at which the material is observed to rise in the capillary tube is taken as the melting point.

Procedure for Testing Materials of Class III: Melt the sample slowly, while stirring, until it reaches a temperature of 90° to 92°C. Remove the source of the heat and allow the molten substance to cool to a temperature of 8° to 10°C above the expected melting point. Chill the bulb of a thermometer to 5°C, wipe it dry, and while still cold thrust it into the molten substance so that approximately the lower half of the bulb is submerged. Withdraw it immediately and hold it vertically away from the heat until the wax surface dulls, then dip it for 5 minutes into a water bath having a temperature not greater than 16°C.

Fix the thermometer securely in a test tube by means of a cork so that the lowest point is 15 mm above the bottom of the test tube. Suspend the test tube in water in a beaker at a temperature of about 16°C, and raise the temperature of the bath to 30°C at the rate of 3° per minute, then at a rate of 2° per minute until the first drop leaves the thermometer. The temperature at which the first drop leaves the thermometer is the melting point. Use a freshly melted portion of the sample for each determination. If the variation of three determinations is less than 1°C, take the average of the three. If the variation of three determinations is greater than 1°C, make two additional determinations and take the average of the five.

P-84—MELTING POINT USING NEW TYPE TUBE

(E. Duncombe, Chemist Analyst, 25, No. 4, 95, 1936)

The difficulty in obtaining uniform results when determining melting points by ordinary methods caused the writer and co-workers to investigate the advantages of several types of tubes as sample holders. The one illustrated here, Fig. 90, was finally found to be the most efficient. The tube is made from very thin walled capillary tubing with an inside diameter of 1-2 mm. The finished tube is U shaped, the legs being just far enough apart so an ordinary chemical thermometer will stand between them, Figure 91. A constriction is made in the tube at (a) Fig. 90 to prevent the sample from sliding down the leg of the tube until melting starts. By having both ends of the U tube open no air pressure develops under the sample when heating is started and once the sample begins to melt it flows down by the constriction to the bottom of the tube. Figure 90 shows position of sample in tube above constriction before heating is started.

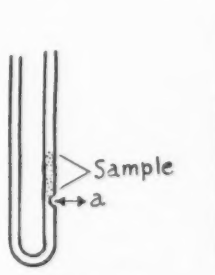

Figure 90

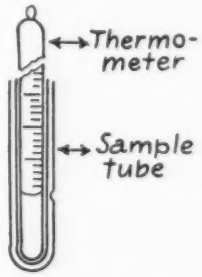

Figure 91

With the above tube very accurate melting points can be determined and the results are very uniform. The actual melting point can be easily seen by noting the temperature at which the sample flows by the constriction. The set-up is the same, except as noted above, as is usually used in running melting point determinations.

P-85—CALCULATING PROBABLE MELTING POINT IN MIXTURES

An interesting method of calculating expected melting point of a mixture of two paraffin waxes is discussed by Godbole and Mehta in their book on "CANDLE MANUFACTURE." published in India. When two waxes are melted having two different melting points, it is often good to know what the melting point of the mixture might be without having to resort to the test. The authors use the following formula:

$$\text{New Melting Point} = \frac{fa + f'a}{a + b}$$

Where f and f' are the melting points of the two different waxes and a and b stand for the respective quantities of the two waxes used. The example Godbole and Mehta gave describes melting 4 parts of paraffin, melting point 55°C,

and 2 parts paraffin, melting point 49°C. According to their formula, the following figures will prevail:

$$\frac{4 \times 55 + 2 \times 49}{4 + 2} = \frac{220 + 98}{6} = 53^{\circ}\text{C}$$

Author's Note: This method has been checked in other mixtures of waxes and does not follow the true line indicated in the above method. It is possible that this method works well with paraffin waxes of special types. Nevertheless, it is an interesting method of calculating the probable melting point.

P-86—METAL CORROSION TESTING METHODS

(The International Nickel Co., Inc.)

In the laboratory, plant corrosion conditions are difficult to reproduce, i.e., solution composition, degree of aeration, agitation, ratio of test specimen to solution, replacement of solution, and accumulation of corrosion product. On the other hand, several variables are capable of being maintained as constants while one is changed, thus obtaining the resulting effect upon the material by the one variable. Examples are concentration, temperature, pressure, aeration, agitation, metal composition and finish. Another disadvantage is that when large numbers of materials or solutions are to be tested, considerable time and equipment are required, consequently the expense is great. Figure 92 illustrates an apparatus which has been used and is capable

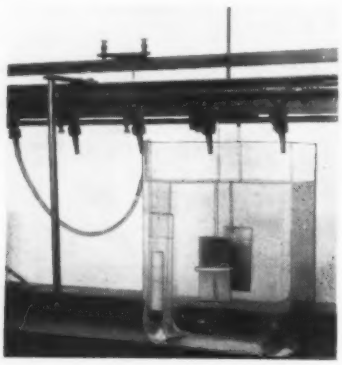

Figure 92. Close up of battery jar used in circular path apparatus for corrosion testing. Shows method for supporting specimens and arrangement of aerating device.

of giving reproducible results. The apparatus consists of a constant temperature tank with heating coils and thermostatic controls. Battery jars are placed in this tank containing the solution to be tested or the solution in which the metal specimens are to be tested. The specimens are mounted on glass hooks or in glass stirrups which are attached to a mechanism capable of imparting a known, constant, vertical, circular path to the mounted specimens. The degree of aeration may be controlled by either passing air, oxygen, or nitrogen into the solution through a porous thimble at a known rate. The specimens are weighed before and after testing on an analytical balance to the nearest one-tenth milligram. Pitting measurements may also be made on the tested specimens.

The second method of corrosion testing is that of field testing. The principal advantage of this method is that corrosion rates are obtained which are quite applicable to the process under consideration. This makes it unnecessary at once to determine just what the operating conditions are and also it avoids the difficulty of reproducing them. Another advantage is that many materials may be tested at the same time and under identical conditions. This facilitates direct comparisons. Furthermore, the material being used may be also included in the test thus affording a check against itself. The test may be continued for as long a time as may be desired with a minimum of expense. The

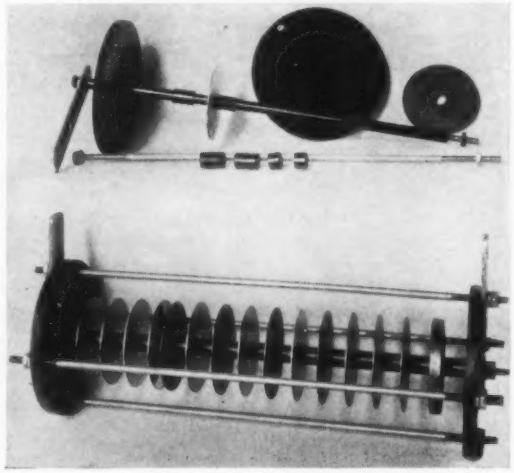

Figure 93. A spool type specimen holder used in testing corrosion of metals. Measuring 12" long and 4" diameter, the spool type specimen can be exposed in almost any equipment tests being made while the equipment is in actual operation.

principal disadvantage of the field test method is that it is not possible to control certain variables such as is possible in the laboratory test method.

Figure 93 illustrates an apparatus which is suitable for field test work. The use of this device has been recommended by the ASTM under Designation A224-41. This device consists of specimens insulated from each other, mounted upon an insulating tube through which a corrosion resistant rod is passed. End discs are fastened to this rod as well as one supporting bracket on each end. Additional rods are added for further support of the end discs and brackets. As many as 12 different materials (in duplicate) may be tested at once. Galvanic couples may also be set up on the holder by the proper use of metallic spacers. The specimens are weighed to the nearest one-tenth milligram before and after testing to determine weight loss. Pitting measurements may also be made upon completion of the test.

P-87—MOISTURE (WATER) IN SKIN CREAMS

(H. D. Murray, J. Soc. Chem. Ind. 51, No. 50, 393-T-394T, 1932)

Water is incorporated with most cold creams and skin foods to improve their feel and to aid their absorption by the skin. It may be determined by dissolving the mixture in a water-immiscible volatile solvent, and distilling over the water with the solvent. More simply, it may be determined by heating about 2 grams of the mixture in an evaporating dish at 80-100° for 12-24 hours. The weight falls rapidly and then becomes approximately constant. Too prolonged heating gives a high result owing to the loss of volatile matter from the mixture.

P-88—MOISTURE DETERMINATION APPARATUS

(J. J. Young, Soap 18, No. 1, 59, 1942)

The standard distillation method for determination of moisture calls for refluxing at least two hours. Thus in the control of moisture, in the "boiling down" method of soap manufacture, it means that considerable time is lost, as the boiling down must be stopped to await the result of the determination. Working with the apparatus illustrated in Figure 94, it was found possible to obtain final and accurate results in about twenty minutes.

Courtesy, Soap

Figure 94. Young's Moisture Determination Apparatus

In operation enough of the unknown to contain 2-3 cc of water is weighed into an Erlenmeyer flask and about 100 cc of xylol (previously water saturated and distilled) is added. Distillation is carried on until no more water collects in the burette. By merely drawing the burette down to zero and substituting a clean flask the apparatus is ready for a second determination.

Before using the apparatus for determination it is necessary to run a blank consisting of approximately 2 cc of water and 100 cc of xylol. This is to provide for water hold-up in the apparatus and zeroing of the burette.

Inherent errors in use of the new apparatus are small. There is no water hold-up above or in the condenser due to the flushing action of the xylol. Due to the design of the connections between the condenser and the burette, the water tends to form in small droplets which shower down through the xylol in the burette to form a definite layer. Hold-up on the sides of the burette is practically nil. There is some hold-up in the return tube trap which can be minimized by using small diameter tube for the return. However, any water held in the apparatus remains practically constant from run to run and therefore may be disregarded.

The speed of the apparatus is due to the efficient separation of the drops of water and xylol in the top of the burette and the partial fractionation taking place in the riser tube. This will be aided if the riser tube is asbestos covered.

P-89—MOISTURE AND VOLATILE MATTER (FATS AND OILS)

(A.O.C.S.)

Hot-Plate Method.—Determination. Weigh out 5- to 20-gram portions of the prepared sample into a glass beaker or casserole and heat on a heavy asbestos board over burner or hot plate, taking care that the temperature of the sample does not at any time go above 130°C. During the heating rotate the vessel gently by hand to avoid sputtering or too rapid evolution of moisture. The approach of the end point may be judged by the absence of rising bubbles of steam and by the absence of foam at the last. The heating, however, should momentarily be carried on to incipient smoking (Caution!). Cool in desiccator and weigh.

Limitations. This method is applicable to all the ordinary fats and oils, including emulsions such as butter and oleomargarine, and high-acid coconut oil. It is not applicable, however, to certain abnormal samples such as naphtha extraction greases which contain, in addition to moisture, solvents of fairly high boiling point which are driven off with difficulty. In handling such samples it is possible to obtain satisfactory results by using the Kingman distillation method for actual moisture and steam distillation for solvents. In difficult cases it may be advisable to determine the actual saponifiable matter present.

With all methods for determining moisture by means of loss on heating there may be a loss due to volatile matter other than water (including fatty acids). The title of the determination, "Moisture and Volatile Matter," indicates this, but any considerable error from this source may occur only in high-acid fats and oils and particularly those containing lower fatty acids such as coconut and palm kernel oil. In the case of extracted greases which have not been properly purified, some of the solvent may also be included in the moisture and volatile matter determination, but inasmuch as the solvent, usually a petroleum product, can only be considered as foreign matter for commercial purposes, it is entirely proper to include it with the moisture.

The committee found by individual, cooperative, and collaborative work by several of its members in one laboratory, that the old, well-known, direct-heating method, which the committee has designated the hot-plate method, yields very satisfactory results on all sorts of fats and oils, including emulsions such as butter and oleomargarine, and even on coconut oil samples containing 15 to 20 percent of free fatty acids and 5 to 6 percent of moisture. The hot-plate method is not applicable to fatty materials, such as extraction greases containing volatile solvents.

P-90—MOISTURE IN SOAPS

(A.O.C.S.)

When a determination shows nonconformity with the specifications, a duplicate shall be run.

I. *Moisture.*—The oven method given below is generally applicable to all soaps. Experience has shown, however, that certain exceptions to this method must be made if accurate results are desired. These exceptions include: (a) For soaps containing appreciable amounts of sodium sili-

cate the distillation method is preferred. (b) Soaps of linseed and other oxidizing oils absorb oxygen and if the oven method is used may gain in weight near the end of the test. Therefore, either an inert atmosphere or vacuum oven should be used. The distillation method is also applicable to these types of soaps. (c) Soaps containing appreciable amounts of glycerine, such as cold made and semi-boiled (including paste soaps) usually give high results by the oven method. The distillation method is preferred for most accurate results on these types of soaps.

(1) *Matter Volatile at 105°C* (Oven Method). Weigh 5 grams (±0.01 grams) of the sample in a porcelain or glass dish about 6 to 7 cm in diameter and 4 cm deep, dry to constant weight in an air oven at a temperature of 105°C (±2°C). Constant weight is attained when successive heating for one hour periods shows a loss (or gain) of not more than 0.1 percent.

(2) *Distillation Method.* For soaps containing from 5 to 25 percent of moisture and volatile matter, use a 20 gram (±0.04 gram) sample. For soaps containing more than 25 percent moisture and volatile matter, use a 10 gram (±0.02 gram) sample. The weighed sample is carefully transferred to a 500 ml Erlenmeyer flask. Add approximately 10 grams of anhydrous, fused sodium acetate to prevent violent frothing, and then follow with 100 ml of xylol which has previously been saturated with water by shaking the xylol with a small quantity of water and distilling. Use the xylol distillate for the determination. Attach the Erlenmeyer flask to a 5 or 6 ml Bidwell-Sterling distillation receiver, which is connected to a reflux condenser (19-in. Liebig condenser). Calibrate the capacity of the Bidwell-Sterling receiver at 25°C. Prior to starting the determination, fill the Bidwell-Sterling receiver with saturated xylol by pouring in through the reflux condenser. For diagram of apparatus, see Soap, 7, No. 11, Nov. 11, 1931, page 35.

So that the refluxing will be under better control, wrap the flask and the tube leading to the receiver with asbestos cloth. Apply heat to the flask by means of a gas burner or an electric heater and distil slowly. The rate at the start should be approximately 100 drops per minute. When the greater part of the water has apparently distilled over, increase the distillation rate to 200 drops per minute until no more water is collected. Purge the reflux condenser during the distillation with 5 ml portions of xylol to wash down any moisture adhering to the walls of the condenser. The water in the receiver may be made to separate from the xylol by using a spiral copper wire. Move the wire up and down in the condenser occasionally, thus causing the water to settle to the bottom of the receiver. Reflux for at least two hours after which time the heat is turned off. Adjust the water distilled over into the receiver to 25°C. Read the volume of water and calculate the percentage of moisture in the soap, as follows:

$$\frac{\text{Volume in ml at } 25^\circ\text{C} \times 0.997}{\text{weight of sample}} \times 100 = \% \text{ moisture in soap}$$

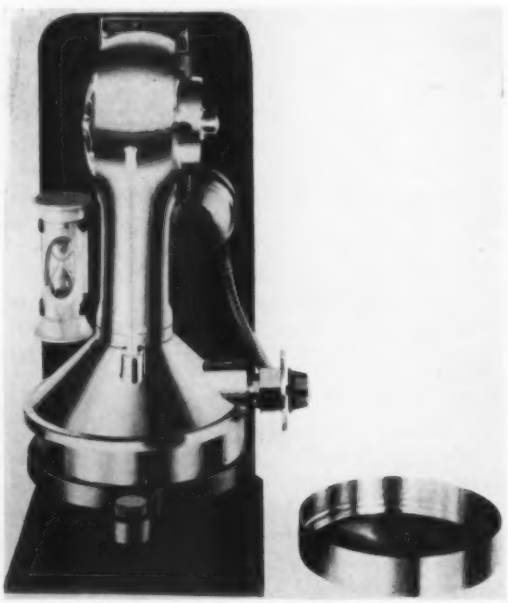

Figure 95. Dietert Moisture Teller

P-91—MOISTURE TELLER METHOD

(Harry W. Dietert Company)

Moisture determinations made with the Moisture Teller (Figure 95) are very simple. Any careful practical man can secure accurate results.

Test is made by switching electric current on Moisture Teller. As shown in Figure 96, the counter weight is

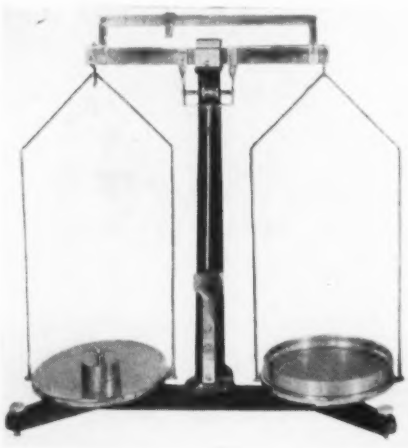

Figure 96. Balance for Moisture Teller Method

placed on right hand pan of balance. The drying pan is placed on left hand pan of balance. Place sufficient material to be tested in drying pan to balance counter weight, thus giving a 50 gram test sample.

Place drying pan containing the test sample under the Moisture Teller by depressing spring loaded holder. A drying time as low as 45 seconds will completely dry most materials.

After drying sample, replace drying pan containing the dried sample on the left hand pan of balance. Balance by moving rider to the left. Multiply rider scale reading by two to obtain exact moisture percentage when 50 gram sample is used. Read direct when 100 gram sample is used.

P-91A—MOISTURE IN BEESWAX

(T.G.A. Method No. 9)

Melt to 70°C (158°F) on a water bath. The resultant liquid should be clear and no water should settle out after standing 24 hours.

P-92—ODOR THRESHOLD TEST

Routine Threshold Test Apparatus
(West Virginia Pulp and Paper Co., Industrial Chemical Sales Div.)

Supply of odor-free water
9—500 cc Erlenmeyer flasks
1—large hotplate
Containers to hold odor-free water
1—250 cc graduated cylinder
1—100 cc graduated cylinder
1—50 cc graduated cylinder
1—25 cc graduated cylinder
1—10 cc graduated pipette
Several thermometers
1 Dilution Chart

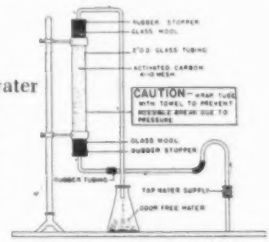

Figure 97. Odor-Free Water Apparatus

PROCEDURE

1. Carefully clean all glassware and rinse with odor-free water. Several rinsings may be required to remove all noticeable odors.

2. Place a number on each Erlenmeyer flask.

3. Consult the dilution chart to decide the range of dilutions considered correct for the water in question. For example on a sample of tap water place

40 cc of the tap water in first flask
50 cc of the tap water in second flask
60 cc of the tap water in third flask
70 cc of the tap water in fourth flask
80 cc of the tap water in fifth flask
95 cc of the tap water in sixth flask
110 cc of the tap water in seventh flask
130 cc of the tap water in eighth flask
250 cc of odor-free water in ninth flask

4. Add sufficient odor-free water to each flask to make the total volume 250 cc.

5. Heat all flasks to 60°C.

6. Rearrange the flasks so that their identity is unknown.

7. Shake each flask and observe the odor of the vapor. Segregate flasks containing odor into one group, and place those without odor in another group.

8. Record the results as plus or zero for each dilution. Table 8 is a suitable record form.

9. Refer to Table 9 the figure opposite the smallest ml that shows plus odor is the Threshold Odor Number of the sample.

PRECAUTIONS NECESSARY FOR PROPER THRESHOLD TEST TECHNIQUE

Odor-free water is easily obtained by passing tap water through a bed of granular activated carbon, a supply of which will be gladly furnished without cost.

Glass-stoppered Pyrex Erlenmeyer Flasks are preferable, but the open mouth type may be used.

If the observations are inconsistent more practice with the test is required.

Clean apparatus, absence of outside odors, uniform temperature of samples and blank, frequent use of a new blank, and an interval of an hour between meals and observations have all been shown to be essential for accuracy.

The observer should smell the undiluted sample in order to become acquainted with the characteristic odor of the water samples.

THRESHOLD DILUTION CHART

Odor = Negative—go down
Odor = Positive—go right

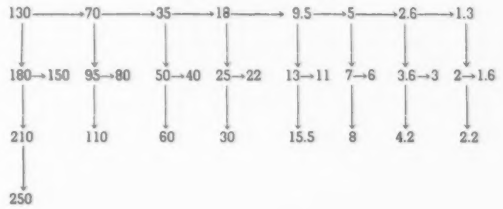

TABLE 8
Threshold Odor Test Data Sheet

Date	Sample	Type Odor	Threshold #	Dilutions Used							
				40	50	60	70	80	95	110	130
6/6/41	Tap	Musty	4	0	0	+	+	+	+	+	+
				12	15	18	22	25	30	35	40
6/7/41	Tap	Musty	7	0	0	0	0	0	0	+	+
				7	8	9.5	11	13	15.5	18	22
6/7/41	Raw	Rotten	22	0	0	0	+	+	+	+	+

Precaution must be taken against fatigue, as prolonged smelling dulls the observer's sensitivity. For greater accuracy, threshold odors should be determined in the shortest possible time.

Figure 98. Making Water Odor Test

P-93—ODOR THRESHOLD TEST—SHORT PARALLEL METHOD

(West Virginia Pulp and Paper Co., Industrial Chemical Sales Division)

When the threshold test is applied to several samples of odor-bearing waters in one series, this method is readily applicable. The water samples may be labeled A, B, C and

TABLE 9
Conversion Table

Dilution in ml.	Threshold Number	Dilution in ml.	Threshold Number	Dilution in ml.	Threshold Number	Dilution in ml.	Threshold Number
250	1	60	4	13	19	3	80
210	1.2	50	5	11	22	2.6	95
180	1.4	40	6	9.5	26	2.2	110
150	1.7	35	7	8	30	2.0	125
130	1.9	30	8	7	35	1.6	160
110	2.3	25	10	6	40	1.3	190
95	2.6	22	11.5	5	50	1.1	220
80	3	18	14	4.2	60	1.0	250
70	3.5	15.5	16	3.6	70		

D and, depending upon their odor intensities, tests may be started at some convenient dilution found on the top row of the Threshold Dilution Chart. The procedure is the same as that described previously for the routine threshold test except that the first dilution of sample A is first observed, then the first dilution of sample B, then the first dilution of sample C, etc. After obtaining the observer's reactions to the first dilutions of each sample, the second dilution of each is prepared and observed in the order previously described, and hence with the third and further dilutions of each sample until the threshold points are reached.

An example of the Short-Parallel Method run on four samples of water is given below. Particular attention should be focused on the column titled, "Order of Preparation of Dilutions."

TABLE 10

SAMPLE	ORDER OF PREPARATION OF DILUTIONS	ML. OF ODOR-BEARING WATER	REACTION	THRESHOLD NUMBER
A	1	70	+	
	5	35	0	
	9	50	+	5
	13	40	0	
B	2	35	+	7
	6	18	0	
	10	25	0	
	14	30	0	
	17	40	+	
C	3	35	+	
	7	18	0	
	11	25	+	
	15	22	+	11½
	18	15.5	0	
D	4	18	0	
	8	35	+	
	12	25	+	10
	16	15.5	0	

The accuracy of the Short-Parallel Method is generally within 25 percent and even more consistent results are obtained after practice and experience. Where two persons are available, one should be assigned the task of making all the odor observations, and the other would prepare the dilutions.

P-94—OIL ABSORPTION VALUE

This criterion has been used by the paint industry and is the amount of oil required by a specific weight of pigment, expressed in grams or ounces of oil per 100 grams or ounces of pigment.

Each pigment and different batches of the same pigment have different oil absorption values. The role played by this property in face powder is very obvious, especially so in warm climates and in the summertime. For a powder, or any other make-up for that matter, that can absorb more oil will obviously keep the make-up nice and dry, especially around the forehead and the lobes of the nose and immediately under. Powders that are wetted by secretions resulting from sweat and the sebaceous glands will form a paste, the color of which is many times greater than that of the powder. In consumer parlance, this is referred to as "staining" or "yellowing" of the powder, a phenomenon that is unsightly and undesirable.

To obtain the oil absorption value, place one gram or ounce of the pigment in question on a glass ointment slab and rub up with raw linseed oil (light mineral oil could probably be used just as well for cosmetic work). The oil is added drop by drop and rubbed in after each drop is added, using a stiff spatula and the test is considered to be complete when the paste formed is rather stiff, and if, when it is spread out into a thin film, it can be rolled up without crumbling. The dropper bottle (Figure 99) containing the oil should be weighed before and after the test. The weight of oil used is then multiplied by 100 to obtain the oil absorption value. The following are some of the oil absorption values of various dry pigments.

Zinc Oxide	11.1 to 23.3
Titanium Dioxide	15.0 to 30.0
Zirconium Oxide	8.4 to 13.6
Barium Sulfate	6.6 to 20.6
Calcium Carbonate	9.3 to 72.0
Talc	16.0 to 40.0
Kaolin	25.2 to 46.8
Ochres	20.0 to 76.0
Siennas	15.15 to 98.0

Figure 99. Dropper Bottle for Oil Absorption Test

P-95—OPTICAL ROTATION

(O.S.P.)

In a ray of ordinary light the vibrations are transverse, that is, they take place in a plane at right angles to the direction of propagation, but the vibration direction is constantly changing. In a ray of plane polarized light, commonly designated as polarized light, the vibrations are also transverse, but they take place in only one direction.

Polarized light is used in the polarizing microscope and the polariscope (see Figure 9) frequently termed a polarimeter. The type of polariscope that is used for determining the percentage of sucrose in solution is called a saccharimeter. These instruments are very serviceable in the determination of the optical properties of solid and liquid substancs, the polarizing microscope being used more often for testing solid substances, while the polariscope is primarily adapted for liquids. The polariscope is primarily employed to study liquids, or solutions of solid substances, that rotate the plane of polarization. Such substances are called optically active. If the rotation of the plane of polarization is to the right (as viewed in the direction of propagation) the substance is designated as dextrorotatory, and to the left as laevorotatory.

The extent of the optical activity of any substance is measured in degrees of rotation, and the instrument used for the determination is generally called a polariscope. The determination of the angle of rotation and the character of rotation, that is, to the right or left, is of importance in ascertaining the identity or purity of the material under consideration. Among the materials recognized in the Pharmacopoeia there are a number, particularly certain volatile oils and related bodies, for which the determina-

tion of the optical activity is of great importance. In some cases the proof of optical inactivity is also very significant.

The property of optical activity is inherently related to the chemical constitution of the substance possessing the property. A knowledge of the extent and character of the optical activity of a specimen may constitute important evidence as to its purity or its concentration in a solution, the other components of which are optically inactive.

Polarimeters are so designed that the angle of rotation may be read to a fraction of a degree. Saccharimeters are provided with a scale that permits the percentage of sucrose in solution to be read directly. The field of vision in these instruments is of the penumbral or half-shadow type, that is, the halves of the field may be unequally illuminated, the reading being taken at the point of equal shadow.

Polarimeters and saccharimeters should be used in a dark room, and the determinations made with monochromatic light, unless otherwise directed. There are many methods and devices for the production of a monochromatic light, but one of the simplest methods is to introduce into the non-luminous flame of a Bunsen burner a small quantity of sodium chloride on a loop of platinum wire. A monochromatic light of more definite characteristics may be obtained by means of a sodium vapor lamp. The monochromatic light thus obtained corresponds to the D line of the solar spectrum.

The following factors are employed for converting readings of a saccharimeter into angular degree readings of a polarimeter.

1°Laurent (French sugar scale) equals 0.2167° angular rotation *D*.

1° Ventzke sugar scale equals 0.3468° angular rotation *D*.

The Ventzke sugar scale is employed upon the Schmidt and Hansch, Peters and Fric saccharimeters. The French sugar scale is employed upon the Laurent-Jobin and Duboscq-Pellin saccharimeters.

The scale reading for any optically active liquid is directly proportional to the length of the transmitting column of liquid; hence it is essential that the length of the tube employed in any test be known. The choice of tube length is influenced by the intensity of color of the test specimen as well as by the extent of optical activity of the specimen.

The specific rotation of a liquid is defined as the angular rotation in degrees through which the plane of polarization of polarized monochromatic (*D*) light is rotated by passage through 1 decimeter of the liquid, calculated to the basis of a specific gravity of 1. In case of a solution of an optically active substance the angular rotation is further calculated to the basis of a concentration of 1 gm of solute in 1 cc of solution.

The temperature at which the rotatory activity of a liquid is observed must be designated for the reason that both the specific gravity and the degree of rotatory effect of the liquid vary considerably with temperature.

The specific rotation of an optically active substance is usually expressed by the term $\left[a\right]_D^t$ which indicates both the temperature and the kind of light used and so stated expresses a characteristic constant for the substance. In this term the letter t represents the numerical designation of the centigrade temperature at which the Specific Rotation was determined, while the letter D indicates that sodium light is used. The absence of any indication of the wave length of the light means that white light is to be used. The temperature at which determinations are to be made for this Pharmacopoeia is 25°C, except where otherwise indicated. By international agreement, 20°C has been adopted as the standard temperature at which to take all saccharimeter readings and is likewise the temperature most often presumed in arranging tabulations of Specific Rotatory Power of Liquids and Solids.

It is customary to indicate the character of the rotation by placing a plus sign (+) or a minus sign (—) before the number indicating the angular rotation, as +20°, meaning 20° to the right or —8°, meaning 8° to the left.

For calculating the specific rotatory power of an optically active liquid substance, or solution of an optically active solid, the following formulas are of general application:

I. For liquid substances $\left[a\right]_D^t = \frac{a}{ld}$ II. For solutions $\left[a\right]_D^t = \frac{100a}{lpd}$ $\left[a\right]_D^t = \frac{100a}{lc}$

For calculating the specific rotation $[a]$ using these formulas, the determination of the following factors is necessary:

a = Observed rotation in degrees of the liquid at a temperature t using a sodium light.
l = The length of the tube in decimeters.
d = The specific gravity of the liquid or solution at the temperature of observation.
p = Concentration of solution expressed as the number of grams of active substance in 100 grams of solution.
c = Concentration of solution expressed as the number of grams of active substance in 100 cc of solution.

P-96—PARTICLE SIZE AND MASS RELATIONSHIP

(Snow Top Chalk Method)

The relationship of each particle division to the total mass was determined. The following size divisions were used, greater than 10 microns in longest diameter, between 5 and 10 microns, between 1 and 5 microns, and 1 micron or less. Magnifications of each grade at 500 and at 200 diameters were photographed.

The method of making the determinations consisted in making a suspension of the material in castor oil, both accurately measured and weighed, in the proportion of 1 gram of material to 1000 cc of oil (1 mg to 1 cc), then counting the particles in a counting chamber. The total number of particles, as well as the number falling in each group were counted.

To check these counting chamber determinations, micrographs were taken at 1000 diameters of a representative field of each material. All the particles in the entire field were counted and the results obtained were found to agree very closely with the counting chamber determinations.

P-97—PARTICLE SIZE

Using a Fisher Sub-Sieve Sizer

(Range of Average Particle Diameter is 0.2 to 50.0 microns)

The Fisher Sub-Sieve Sizer embodies the principles of a particle size measuring apparatus assembled and used by Ernest L. Gooden and Chas. M. Smith in connection with their investigations pertaining to the effect of particle

size in the production of powders for insecticides, as well as other uses.

The instrument (Figure 100) employs what is generally known as the air-permeability method for measuring the average particle size of a powder. It is based upon the fact that a current of air flows more readily through a bed of coarse powder than through an otherwise equal bed of

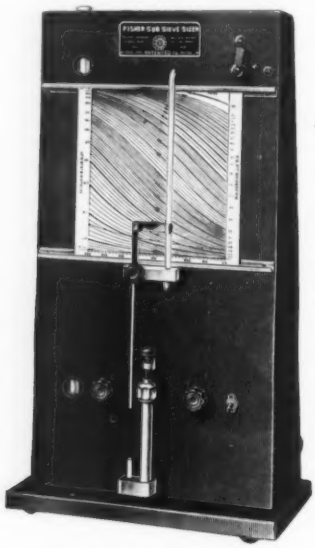

Figure 100. Fisher Sub-Sieve Sizer

fine powder—that is, equal in shape of bed, apparent volume, and percentage of voids—but, by reason of difference in general coarseness of material, differing in average pore diameter and in total interstitial surface.

Measuring Particle Size

The Sub-Sieve Sizer is supplied with a sample tube, manufactured with a precision bore to tolerances less than 0.001 inch, a plug manipulator, a glass powder funnel, two porous plugs, a supply of paper discs, and a rubber sample tube support stand.

The procedure for measuring Particle Size is as follows:

1. Screw one of the porous plugs to the plug manipulator, lay a paper disc over one end of the sample tube, and push the plug into the sample tube, with the perforated surface of the plug against the surface of the paper disc, forcing the paper to crimp around the edges and precede the plug into the sample tube. The plug is pushed into the tube for about one-half inch. The plug manipulator is then removed.
2. The sample tube is placed in a vertical position in the rubber support stand with the paper side of the plug up.
3. Weigh out (to .01 gm) a sample of dry powder equal in grams to the true density of the sample.
4. With the aid of the glass powder funnel, completely transfer the weighed sample into the sample tube, tapping the side of the tube to settle the powder.
5. Lay a second paper disc over the top of the sample tube, attach the second porous plug to the manipulator, and force the plug and paper disc down into the sample tube until the powder is compacted enough to move the lower plug. Remove the manipulator.
6. Place the sample tube on the brass post beneath the rack and pinion with the lower plug in contact with the upper end of the brass post.
7. Lower the rack, guiding it until the flat bottom end comes in contact with the upper plug. Turn the Pinion Knob firmly until the sample is packed to the desired porosity. (If a particular porosity is desired, first set the Calculator Chart to indicate that porosity. Then pack the sample until the pointer coincides with the Sample Height Curve).
8. If not done under Step 7, shift the Calculator Chart laterally until the extreme tip of the point just coincides at some point with the Sample Height Curve on the Chart. *The Chart should not be moved after this setting until the determination is finished.*
9. Mount the sample tube, without disturbing the sample in any way, between the rubber-cushioned supports just to the right of the brass post. Screw the upper cap down onto the sample tube until an air-tight seal is obtained at both ends.
10. Plug the line cord into a 110 volt, 60 cycle Alternating Current line. Throw the electrical switch at the lower right hand corner of the front panel to the "ON" position. This turns on the pilot lamp as well as the air-pump. The pilot lamp illuminates the tip of the bubbler tube in the pressure regulator standpipe, as observed through the round window in the lower left-hand corner of the front panel as well as the level of the water with relation to the calibration mark as observed through the upper window.
11. Adjust the Pressure Control Knob, located near the Bubbler Observation Window at the lower left of the panel, until the bubbles rise in the standpipe at the rate of two to three bubbles per second. This will cause the water level to rise above the calibration mark on the upper end of the standpipe. This is normal and does not mean the calibration is in error.
12. The liquid level in the manometer tube will rise slowly and reach a maximum within 30 seconds to several minutes, depending on the particle size. After the maximum rise has been obtained, using care not to disturb the chart, the rack is turned up until the upper edge of the cross bar coincides with the liquid meniscus in the manometer. The Particle Size is indicated by the location of the tip of the pointer with relation to the curves on the Calculator Chart. The Chart is like an ordinary graph with the exception that the normally horizontal lines are curved. The fractional parts are obtained by interpolating between curves in the usual manner as interpolating between straight lines on the ordinary graph.

Notice that the diameter value between two successive curves changes as the size increases, with each curve between 0.2 to 4.00 microns representing 0.1 micron, each curve between 4.00 and 8.00 representing 0.2 micron, each curve between 8.00 and 15.0 microns representing 0.5 micron, each curve between 15.0 and 20.0 microns representing 1.0 micron, and the space between 20.0 and 25.0 microns representing 5.0 microns.

If the Average Particle Diameter falls in the range 0.2 to 20.0 microns, read the chart directly with the Range

Control, found at the extreme upper right of the front panel, turned to the LO position. If the Average Particle Size falls between 20.0 and 50.0 microns, turn the Range Control to the HI position and multiply the Chart readings by two to secure Average Particle Diameter.

P-98—MEASUREMENT OF THE PERMEABILITY OF PAPER AND PAPERBOARD

(Paper Trade Jour., 118, Feb. 3rd, 1944; T.A.P.P.I. Sect., 37-39)

The method described is the T.A.P.P.I. Official Standard, T 448-m-41, and is suitable for sheet materials up to 1 inch in thickness. Place sufficient calcium chloride or anhydrous magnesium perchlorate (in small lumps, free from fines passing a No. 30 screen) in an open-mouthed cup or dish (area, at least 30 sq cm) to a depth of at least 15 mm. Suitable designs for the dish, with supporting flanges and rings, are illustrated. Cut a circle of the specimen (with the aid of a template) with such diameter that it closes the aperture of the dish and rests on the supporting flange. Seal the specimen to the edge of the dish with a molten mixture of equal parts of rosin and beeswax, so as to obtain an air-tight joint. Weigh the assembly to 1 mg using as a tare a similar dish covered with the specimen, but containing no desiccant. Place the dish on a rack in a cabinet or room at 50 percent relative humidity and 73°F in an inverted position, so that an even layer of desiccant is in contact with the inside face of the test sheet, and that free access of the conditioned air, circulating continuously at not less than 500 ft per minute, is available over the other. Weigh the assembly at suitable intervals until the gain in weight is constant. With relatively pervious papers, complete the test by making frequent weighings before the desiccant cakes or forms drops of liquid agglomerate (indicated by a "drift" from the constant rate of gain). Plot the gain in weight against the time; the slope of the linear portion of the curve is a measure of the permeability, and results are reported to three significant figures as grams per square meter per 24 hours, for each side of the paper, separately. Duplicate determinations should agree within 10 percent. (Through *The Analyst 69*, 166, 1944.)

P-99—RATTLE POINT AND FLOW POINT

(T.G.A. Method No. 15)

1. Weigh 15 grams of the sample and transfer to a flat bottom glass cylinder 20 mm x 240 mm.
2. Gently tap the cylinder so as to distribute the sample along the length of the cylinder. There should be a clear channel to the bottom.
3. Introduce from a burette into the cylinder a volume of distilled water, approximately three-quarters of that required for the test. A preliminary test or familiarity with the sample will make this possible.
4. Stopper the cylinder and shake the contents thoroughly by rapidly moving the cylinder back and forth in an arc of about 120 degrees in the plane of the body.
5. Continue to add distilled water in 1 ml and 0.5 ml portions as the final reading is approached, shaking as per step 4 after each addition of water.
6. A point will be reached at which the slurry will slide the full length of the cylinder when shaken, as above described, causing a rattling sound. This is the "*Rattle Point*" and is recorded as ml of water used.

Note: The Rattle should be clearly audible to a person standing near the operator. The slurry should be checked for freedom from lumps and uneven dispersion of the sample by tapping the stoppered end of the vertically held cylinder against the table top. Lumps should not be observed and the slurry should settle, leaving the tube clean enough so that the level of the paste can be readily discerned by holding the cylinder before a window. If there is any indication of splash in the sound, the end point has been passed.

7. Continue to add water in 0.5 ml portions, and shake after each addition as described in step 4.
8. After each addition and shaking invert the cylinder and gently pack the slurry into the stoppered end. Then incline the cylinder at an angle of 60° to the horizontal and note whether the contents flow down to the other end of the cylinder. No not shake the cylinder, or in any way give the slurry a start. A second point will be reached at which the slurry will flow evenly from one end of the cylinder to the other when treated in this manner. This represents the maximum water absorption of the chalk and is recorded in ml of water as the "*Flow Point.*"

   The flow should not be sluggish. The slurry should be free of lumps. If at this point the cylinder is held in a horizontal position and slowly rotated, the slurry will flow down the walls and not rotate with the cylinder.

Note: With certain chalks it is possible to encounter the flow before the rattle point is reached.

P-100—REFRACTIVE INDEX

(A.O.A.C., Methods, 1925, p. 283)

GENERAL DIRECTIONS.—Place the instrument in such a position that diffuse daylight or any form of artificial light can readily be obtained for illumination. Circulate through the prisms a stream of water of constant temperature. Determine the index of refraction with any standard instrument, reading oils and fats at 40°C.

The readings of the Zeiss butyro-refractometer can be reduced to standard temperature by the following formula:

$R = R' + 0.55\ (T' - T)$ in which

R = the reading reduced to temperature T

R' = the reading at T'°C.

T' = the temperature at which reading R' is made

T = the standard temperature

0.55 = correction in scale divisions for 1°C.

With oils the factor 0.58 is substituted in the formula for 0.55, since they have a higher index of refraction.

The readings of instruments, which give the index of refraction directly, can be reduced to standard temperature by substituting the factor 0.000365 for 0.55 in the formula. As the temperature rises the refractive index falls. The instrument used may be standardized with water at 20°C, the theoretical refractive index of water at that temperature being 1.3330. Any correction found should be made on all readings. The index of refraction varies with the specific gravity and in the same direction. If the results appear abnormal, compare the specific refractive power with the normal.

Calculate the specific refractive power from the formula $\frac{N-1}{D}$, in which N equals the refractive index and D the specific gravity. According to Proctor, the Lorenz formula $\frac{N^2-1}{(N^2+2)\,D}$ gives much more satisfactory results than $\frac{N-1}{D}$.

By Means of the Abbe Refractometer

To charge the instrument, open the double prisms by means of the screw head and place a few drops of the sample on the prism or, if preferred, open the prisms slightly by turning the screw heat and pour a few drops of the sample into the funnel-shaped aperture between the prisms. Then close the prisms firmly by tightening the screw head. Allow the instrument to stand for a few minutes before making the reading, so that the temperature of the sample and the instrument will be the same.

The method of measurement is based upon the observation of the position of the border line of total reflection in relation to the faces of a prism of flint glass. Bring this border line into the field of vision of the telescope by rotating the double prism by means of the alidade in the following manner: Hold the sector firmly, move the alidade backward or forward until the field of vision is divided into a light and a dark portion. The line dividing these portions is the "border line." This, as a rule, will not be a sharp line but a band of color. The colors are eliminated by rotating the screw head of the compensator until a sharp, colorless line is obtained. The border line should now be adjusted so that it falls on the point of intersection of the cross hairs. Read the refractive index of the substance directly on the scale of the sector. Check the correctness of the instrument, as directed under General Directions, or by means of the Quartz plate which accompanies it, using monobromonaphthalene, and make the necessary correction in the reading.

By Means of the Zeiss or Valentine's Butyro-Refractometer

Place two or three drops of the filtered fat on the surface of the lower prism. Close the prisms and adjust the mirror until it gives the sharpest reading. If the reading is indistinct after running water of a constant temperature through the instrument for some time, the fat is unevenly distributed on the surface of the prism. As the index of refraction is greatly affected by temperature, care must be used to keep the latter constant. The instrument should be carefully adjusted by means of the standard fluid which is supplied with it. Convert the degrees of the instrument into refractive indices from Table 11.

TABLE 11

Butyro-Refractometer Readings and Indices of Refraction

Reading	Index of refraction	Reading	Index of refraction	Reading	Index of refraction	Reading	Index of refraction
40.0	1.4524	50.0	1.4593	60.0	1.4659	70.0	1.4723
40.5	1.4527	50.5	1.4596	60.5	1.4662	70.5	1.4726
41.0	1.4531	51.0	1.4600	61.0	1.4665	71.0	1.4729
41.5	1.4534	51.5	1.4603	61.5	1.4668	71.5	1.4732
42.0	1.4538	52.0	1.4607	62.0	1.4672	72.0	1.4735
42.5	1.4541	52.5	1.4610	62.5	1.4675	72.5	1.4738
43.0	1.4545	53.0	1.4613	63.0	1.4678	73.0	1.4741
43.5	1.4548	53.5	1.4616	63.5	1.4681	73.5	1.4744
44.0	1.4552	54.0	1.4619	64.0	1.4685	74.0	1.4747
44.5	1.4555	54.5	1.4623	64.5	1.4688	74.5	1.4750
45.0	1.4558	55.0	1.4626	65.0	1.4691	75.0	1.4753
45.5	1.4562	55.5	1.4629	65.5	1.4694	75.5	1.4756
46.0	1.4565	56.0	1.4633	66.0	1.4697	76.0	1.4759
46.5	1.4569	56.5	1.4636	66.5	1.4700	76.5	1.4762
47.0	1.4572	57.0	1.4639	67.0	1.4704	77.0	1.4765
47.5	1.4576	57.5	1.4642	67.5	1.4707	77.5	1.4768
48.0	1.4579	58.0	1.4646	68.0	1.4710	78.0	1.4771
48.5	1.4583	58.5	1.4649	68.5	1.4713	78.5	1.4774
49.0	1.4586	59.0	1.4652	69.0	1.4717	79.0	1.4777
49.5	1.4590	59.5	1.4656	69.5	1.4720	79.5	1.4780

Note (F.A.C.).—For higher melting fats and waxes, standard temperatures of 50°, 60°, 70°, 80°C, etc., should be used according to the melting point of the material to be tested, the refractive index being determined at a temperature as near as possible to the standard temperature next above that at which the material melts and the refractive index calculated for this temperature, except that for fats melting between 40° and 50°C, the refractive index shall be determined at a temperature as near 40°C as practicable and calculated for the standard temperature of 40°C.

(Chapter IV continues in subsequent issue.)